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University of Missouri-St. Louis

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GRADUATE BULLETIN 1972-74

University of Missouri - St. Louis
St. Louis, Missouri

*Bulletin of the
University of Missouri-St. Louis*

**THE GRADUATE SCHOOL
1972-1974**

THE UNIVERSITY OF MISSOURI-ST. LOUIS 1972-1974 GRADUATE BULLETIN
8001 Natural Bridge Road, St. Louis, Missouri 63121

Including Description of Courses* Revised to April 15, 1972

*Courses offered only on the campus at St. Louis. For information concerning the University of Missouri-Columbia, the University of Missouri-Rolla and the University of Missouri-Kansas City, write directly to the Director of Admissions at the campus concerned. All statements in this publication are announcements of present policies only and are subject to change at any time without prior notice. They are not to be regarded as offers to contract.



CALENDAR OF THE GRADUATE SCHOOL 1972 - 73

1972 FALL SEMESTER

August 21, 22	Regular Registration, Day Students
August 23, 24	Evening College and Graduate Registration 4:00 p.m. - 9:00 p.m.
August 30	Classwork begins 7:40 a.m.
September 4	Labor Day (Holiday)
October 28	Graduate Record Examination
November 10	Last date for filing applications for graduate degrees and for submitting doctoral dissertations
November 22	Thanksgiving Holiday begins 5:30 p.m.
November 27	Classwork resumes 7:40 a.m.
December 1	Last date for submitting master's theses
December 9	Graduate Record Examination
December 12, 13	Intensive Study Days (no classes scheduled)
December 14	Final Examinations begin
December 22	First Semester closes 5:00 p.m.

1973 WINTER SEMESTER

January 9	Registration, Day Students
January 10, 11	Evening College and Graduate Registration 4:00 p.m. - 9:00 p.m.
January 17	Classwork begins 7:40 a.m.
January 20	Graduate Record Examination
February 24	Graduate Record Examination
March 23	Spring Recess begins 5:30 p.m.
April 2	Classwork resumes 7:40 a.m.
April 3	Last date for filing applications for graduate degrees and for submitting doctoral dissertations
April 24	Last date for submitting master's theses
April 28	Graduate Record Examination
May 3, 4	Intensive Study Days (no classes scheduled)
May 7	Final Examinations begin
May 15	Second Semester closes 5:00 p.m.
May 17	Annual Commencement

1973 SUMMER SESSION

June 6, 7	Evening College and Graduate Registration 4:00 p.m. - 9:00 p.m.
June 11	Regular Registration
June 12	Classwork begins 7:40 a.m.
June 16	Graduate Record Examination
June 22	Last date for filing applications for graduate degrees and for submitting doctoral dissertations
July 4	Independence Day ((holiday)
July 13	Last date for submitting master's theses
August 2, 3	Final Examinations
August 3	Summer Session closes end of day

CALENDAR OF THE GRADUATE SCHOOL 1973 - 74

1973 FALL SEMESTER

August 23, 24	Regular Registration, Day Students
August 27, 28	Evening College and Graduate Registration 4:00 p.m. - 9:00 p.m.
August 30	Classwork begins 7:40 a.m.
September 3	Labor Day Holiday
October 27	Graduate Record Examination
November 9	Last date for filing applications for graduate degrees and for submitting doctoral dissertations
November 21	Thanksgiving Recess begins, 5:30 p.m.
November 26	Classwork resumes 7:40 a.m.
November 30	Last date for submitting master's theses
December 8	Graduate Record Examination
December 10	Classwork ends 10:30 p.m.
December 11, 12	Intensive study days (no classes scheduled)
December 13	Final Examinations begin
December 21	First Semester closes, 5:00 p.m.

1974 WINTER SEMESTER

January 3	Registration, Day Students
January 7, 8	Evening College and Graduate Registration, 4:00 p.m. - 9:00 p.m.
January 11	Classwork begins 7:40 a.m.
January 19	Graduate Record Examination
February 23	Graduate Record Examination
March 15	Spring Recess begins 5:30 p.m.
March 25	Classwork resumes 7:40 a.m.
March 28	Last date for filing applications for graduate degrees and for submitting doctoral dissertations
April 12	Good Friday Holiday
April 18	Last date for submitting master's theses
April 27	Classwork ends, 12:00 noon
April 27	Graduate Record Examination
April 29, 30	Intensive Study Days (no classes scheduled)
May 1	Final Examinations begin
May 9	Second Semester closes, 5:00 p.m.
May 16	Annual Commencement

1974 SUMMER SESSION

June 10, 11	Evening College and Graduate Registration, 4:00 p.m. - 8:30 p.m.
June 13	Regular Registration
June 14	Classwork begins 7:40 a.m.
June 15	Graduate Record Examination
June 21	Last date for filing applications for graduate degrees and for submitting doctoral dissertations
July 4	Independence Day Holiday
July 12	Last date for submitting master's theses
August 1, 2	Final Examinations
August 2	Summer Session closes, end of day

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The Administration and Faculty

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Assistant to the Chancellor

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Dean of Faculties

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Samuel J. Marwit, Ph.D.
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Associate Dean

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Assistant Dean

Frank R. Gross, M.A.
Assistant to the Dean

School of Business Administration

Emery C. Turner, D.B.A.
Dean

Donald H. Driemeier, D.B.A.
Associate Dean

School of Education

William L. Franzen, Ph.D.
Dean

Arthur E. Smith, Ph.D.
Associate Dean

Hans C. Olsen, Ed.D.
Assistant Dean

Evening College

Joy E. Whitener, Ed.D.
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Harry Gaffney, Ph.D.
Assistant Dean

Donald G. Bowling, M.A.
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Graduate School

Robert S. Sullivant, Ph.D.
Dean and Director of Research

Extension Division

Virgil N. Sapp, B.S.
Dean

Clive Veri, Ph.D.
Assistant Dean

Student Affairs

David R. Ganz, M.S. in C.
Dean

J. Todd Dudley, M.Ed.
Assistant Dean

COMMITTEES IN THE GRADUATE SCHOOL

Graduate Council

Harry Bash
Elizabeth Clayton
Bernard Cohen
Donald Driemeier
Richard Dustin
Corneliu Eftimiu
Edwin Fedder
Lawrence Friedman
Deborah Haimo
Arthur Irion
Tom Jones, *vice chairman and
secretary*
Thomas Jordan
Jacob Leventhal
Robert Murray
Arthur Shaffer
Arthur Smith

The ADMINISTRATION and FACULTY

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Paul Travers

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Committee On Regulations

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Harvey Friedman
Arthur Smith
Grant Welland

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Valerie Lagorio
Jacob Leventhal
Arthur Shaffer
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Richard Dustin
Thomas Jordan
M. Thomas Jones
Harold Turner
Robert S. Sullivant, *ex officio, chairman*

GRADUATE FACULTY

Marcus Allen Ph.D.
associate professor, French,
Univ. of Pittsburgh, 1964

The ADMINISTRATION and FACULTY

Mridula Durbin, Ph.D.
assistant professor, sociology,
State Univ. of New York, 1965

Richard Dustin, Ph.D.
assistant professor, education,
Univ. of Minnesota, 1968

Corneliu Eftimiu, Ph.D.
professor, physics,
Univ. of Bucharest, 1963

Walter Ehrlich, Ph.D.
associate professor, history,
Washington Univ., 1950

William Eidson, Ph.D.
professor, physics,
Indiana Univ., 1961

William Erickson, Ph.D.
assistant professor, sociology,
Univ. of Illinois-Chicago Circle, 1971

K. Peter Etzkorn, Ph.D.
professor, sociology,
Princeton Univ., 1959

Margaret Fagin, Ed.D.
associate professor, education
Syracuse Univ., 1950

Dennis Fallon, Ph.D.
assistant professor, education,
Univ. of Minnesota, 1969

Charles Fazzaro, Ed.D.
assistant professor, education,
West Virginia Univ., 1971

Edwin Fedder, Ph.D.
professor, political science,
American Univ., 1957

Richard C. Ferrigno, Ph.D.
assistant professor, sociology,
St. Louis Univ., 1970

Theodore Fleming, Ph.D.
assistant professor, biology,
Univ. of Michigan, 1969

Charles C. Foster, Ph.D.
assistant professor, physics,
Indiana Univ., 1967

William L. Franzen, Ph.D.
professor, education,
University of Wisconsin, 1961

Harvey Friedman, Ph.D.
associate professor, biology,
Kansas Univ., 1963

***Lawrence D. Friedman, Ph.D.
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Univ. of Wisconsin, 1961

Barbara Fulton, Ph.D.
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Univ. of Missouri-Columbia, 1971

Peter Fuss, Ph.D.
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Robert Gard, Ed.D.
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***David L. Garin, Ph.D.
associate professor, chemistry,
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Rickey George, Ph.D.
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Northwestern Univ., 1968

Louis Gerteis, Ph.D.
assistant professor, history,
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Richard C. Gilman, Ph.D.
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Joseph Giljum, L.L.M.
assistant professor, business administra-
tion, New York Univ., 1965

Roseanne Gmuier, Ph.D.
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Alfred Goessl, Ph.D.
associate professor, modern languages
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Robert M. Gordon, Ph.D.
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Charles Gouaux, Ph.D.
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Charles Granger, Ph.D.
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***James C. Gravitt, Ph.D.
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Donald R. Greer, Ph.D.
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Univ. of Missouri-Columbia, 1965

Donald Grogan, Ph.D.
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Univ. of Missouri-Columbia, 1962

Werner Grunbaum, Ph.D.
professor, political science,
Univ. of Chicago, 1955

David Gustafson, Ph.D.
associate professor, business administra-
tion, Stanford, 1966

***Deborah Tepper Haimo, Ph.D.
professor, mathematics,
Harvard Univ., 1964

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associate professor, physics,
Univ. of Bucharest, 1965

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assistant professor, business administra-
tion, economics, Purdue Univ., 1970

John Edward Hardy, Ph.D.
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Johns Hopkins Univ., 1956

Harold H. Harris, Ph.D.
assistant professor, chemistry,
Michigan State, 1967

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Univ. of Missouri-Columbia, 1966

Curt Hartog, Ph.D.
assistant professor, English,
Univ. of Illinois-Urbana, 1971

Steven Hause, Ph.D.
assistant professor, history,
Washington Univ., 1969

Thomas Hay, Ph.D.
assistant professor, sociology,
Michigan State Univ., 1968

Robert Henson, Ph.D.
associate professor, physics,
Washington Univ., 1964

Robert Hight, Ph.D.
associate professor, physics,
Univ. of Missouri-Columbia, 1961

Jerome Himelhoch, Ph.D.
professor, sociology,
Columbia Univ., 1952

The ADMINISTRATION and FACULTY

Steven E. C. Hintz, Ph.D.
assistant professor, political science,
Yale Univ., 1971

Edmund S. Howe, Ph.D.
professor, psychology,
London Univ. (Univ. College), 1952

Theresa Howe, Ph.D.
associate professor, psychology,
Univ. of California, Berkeley, 1966

Arthur L. Irion, Ph.D.
professor, psychology,
State Univ. of Iowa, 1947

Philip B. James, Ph.D.
assistant professor, physics,
Univ. of Wisconsin, 1966

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associate professor, political science,
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New York Univ., 1968

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Charles Kuehl, Ph.D.
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David W. Larsen, Ph.D.
associate professor, chemistry,
Northwestern Univ., 1963

Charles Larson, Ph.D.
assistant professor, English,
Indiana Univ., 1970

Jacob J. Leventhal, Ph.D.
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assistant professor, political science,
Johns Hopkins Univ., 1970

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The ADMINISTRATION and FACULTY

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The ADMINISTRATION and FACULTY

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The ADMINISTRATION and FACULTY

Paul Skjerseth, Ph.D.
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Arthur E. Smith, Ph.D.
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Charles Smith, M.S.
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Herman W. Smith, Ph.D.
assistant professor, sociology,
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Robert Sorensen, Ph.D.
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Virginia Polytechnic Institute, 1971

Robert Starr, Ed.D.
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Univ. of Missouri-Columbia, 1970

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assistant professor, political science,
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Denton Stewart, Ph.D.
assistant professor, psychology,
Temple Univ., 1972

Robert Stich, Ph.D.
professor, business administration,
New York Univ., 1966

Monroe Strickberger, Ph.D.
professor, biology,
Columbia Univ., 1962

Margaret Sullivan, Ph.D.
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St. Louis Univ., 1968

Robert S. Sullivant, Ph.D.
professor, political science,
Univ. of Chicago, 1958

Sara Sutker, Ph.D.
associate professor, sociology,
Univ. of North Carolina, 1956

Solomon Sutker, Ph.D.
professor, sociology,
Univ. of North Carolina, 1951

Norbert Terre, D.B.A.
associate professor, business administration,
Washington University, 1967

Fred Thumin, Ph.D.
professor, business administration,
psychology, Washington Univ., 1957

James E. Tierney, Ph.D.
assistant professor, English,
New York Univ., 1969

Robert Tolsma, Ph.D.
assistant professor, education,
Iowa State Univ., 1971

Blanche Touhill, Ph.D.
associate professor, history,
St. Louis Univ., 1962

Paul Travers, Ed.D.
associate professor, education,
George Peabody College for Teachers,
1967

Doris Trojcek, Ed.D.
assistant professor, education,
Indiana Univ., 1969

Emery C. Turner, D.B.A.
professor, business administration,
Washington Univ., 1966

**Harold E. Turner, Ed.D.
professor, education,
George Peabody College for Teachers,
1956

James Tushaus, Ph.D.
associate professor, business administration,
Univ. of Illinois, 1968

Clive Veri, Ph.D.
associate professor, education,
Univ. of Nebraska, 1968

Bedford M. Vestal, Ph.D.
assistant professor, biology,
Michigan State Univ., 1970

George A. von Glahn, Ph.D.
assistant professor, English,
Univ. of North Carolina, 1969

James T. Walker, Ph.D.
assistant professor, psychology,
Univ. of Colorado, 1966

Huber M. Walsh, Ed.D.
professor, education,
Univ. of California, Los Angeles, 1962

Everett Walters, Ph.D.
professor, history,
Columbia Univ., 1947

Elizabeth Watson, Ed.D.
associate professor, education,
Indiana Univ., 1969

Henry R. Weinstock, Ed.D.
professor, education,
Univ. of Georgia, 1965

Grant Welland, Ph.D.
associate professor, mathematics
Purdue Univ., 1966

Herbert D. Werner, Ph.D.
associate professor, economics,
Univ. of California-Berkeley, 1964

Joy Whitener, Ed.D.
professor, education,
Washington Univ., 1963

King Wientge, Ed.D.
professor, education,
Washington Univ., 1965

Frederick Wilke, Ph.D.
assistant professor, mathematics,
Univ. of Missouri-Columbia, 1966

Jane Williamson, Ph.D.
associate professor, English,
Bryn Mawr College, 1963

Earl A. Wims, Ph.D.
assistant professor, business administration,
Univ. of Iowa, 1968

Rudolph E. K. Winter, Ph.D.
associate professor, chemistry,
Johns Hopkins Univ., 1964

George Witteried, J.D.
associate professor, business administration,
Northwestern Univ., 1952

Peter Wolfe, Ph.D.
associate professor, English,
Univ. of Wisconsin, 1965

James Wong, Ph.D.
assistant professor, business administration,
Ohio State Univ., 1968

Sam Wood, Ed.D.
assistant professor, education,
Univ. of Florida, 1969

Lee Young, L.L.M.
associate professor, business administration,
Washington Univ., 1967

D. J. Zerbolio, Ph.D.
associate professor, psychology,
Michigan State Univ., 1965

David R. Ziff, Ph.D.
assistant professor, psychology,
Univ. of Texas, 1970

*On leave, fall semester, 1972-73 **On leave, winter semester, 1972-73 ***On leave, 1972-73



General Information

HISTORY

Established at Columbia, Missouri in 1839, the University of Missouri was the first state university to be chartered west of the Mississippi River. In 1843 the university awarded bachelor's degrees to two members of its first graduating class, and in 1846 it awarded its first master's degree. By 1896 a Graduate Department had been created within the university, and the first doctor of philosophy degree was awarded in 1899.

As a land-grant institution and the sole public university in the state of Missouri, the university developed rapidly in its mission of building educational and research programs and related public service functions. Increasingly, emphasis was placed on graduate and professional training and allied research. The university remained a single campus institution until 1870 when a separate School of Mines and Metallurgy was established at Rolla. Initially a division of the main campus at Columbia, the School of Mines in 1964 became an autonomous campus, the University of Missouri-Rolla.

In 1963, the university underwent a major reorganization. The University of Kansas City, formerly a private institution, was absorbed as a new campus: the University of Missouri-Kansas City. Simultaneously, a new campus was created in the state's largest metropolitan

area, the University of Missouri-St. Louis. The four campuses which thus came to comprise the university were established, each with a chancellor and administrative staff operating under the general direction of the President of the university and its Board of Curators. As a result of the reorganization, the university broadened extensively its educational, research and public service functions. By 1971 university enrollment had grown to nearly 50,000 students, with more than 10,000 enrolled in graduate and advanced professional programs. The university thus numbered among the dozen largest and most comprehensive of American institutions of higher education.

UNIVERSITY OF MISSOURI-ST. LOUIS

As the newest and youngest of the University of Missouri's four campuses, the University of Missouri-St. Louis has experienced a brief but vigorous period of development. The unique mission initially assigned the university was the mission of exploring and developing the roles appropriate to a major public university established as a distinct urban institution. In the first phase of its development, the university was placed on a 128-acre campus in the community of Normandy, a northwestern suburb of metropolitan St. Louis. Facilities grew rapidly from the single building which at first housed the university to the

GENERAL INFORMATION

eleven major structures which currently comprise the campus. As student enrollment grew from 672 undergraduates in 1963 to more than 10,000 graduates and undergraduates in 1971, the faculty grew correspondingly from 28 to 593.

Instructional and research programs of the university were organized within a small number of academic divisions. The first of these divisions was created in 1965 with organization of the College of Arts and Sciences. In the following year two additional divisions were formed, the School of Education and the Evening College. In 1967 the School of Business Administration was established. Within these divisions a variety of undergraduate degree programs are currently offered.

At the graduate level, instruction was first provided in 1965 through a cooperative program in education administered jointly by the Columbia and St. Louis campuses. In 1968 independent graduate programs were established and the Graduate School was organized, assuming responsibility for graduate study offered in the various divisions of the university. By 1971, more than 1100 graduate students were enrolled in 11 programs in arts and sciences, business administration, and education. The number and scope of these graduate programs is steadily being expanded.

As part of a metropolitan area with a population greater than 2,300,000, the university has immediately available the cultural, educational, industrial and transportation facilities of one of the country's major centers, including public and private libraries with specialized research and archival collections, the second oldest symphony orchestra in the United States, excellent museums, medical centers, theatrical companies and athletic and recreational facilities. St. Louis is the most diversified industrial center in the United States, and its

industrial firms include a variety of advanced research and development laboratories and centers. The score of public and private universities and colleges in the area provide an environment for graduate education and research which is surpassed in few other areas. Cooperative arrangements among these institutions provide library and research facilities as well as a small number of educational programs which complement the facilities and programs of the separate institutions.

GRADUATE STUDY AT UMSL

Graduate study at UMSL embraces all study for degrees and certificates beyond the bachelor's degree. It is administered by the Graduate School under policies and regulations established by the Graduate Faculty of the university and by the Graduate Council. Graduate programs fall into two broad categories: (1) professional programs directed by professional schools or committees and designed to develop a special professional competence and an advanced ability to explore problems peculiar to a professional field; (2) academic programs directed by academic departments or certain professional schools and designed to develop command of a range of related subjects within an academic field and an ability to conduct original research and to communicate effectively in a scholarly setting.

The university is authorized to grant the graduate degrees of master of arts, master of science, master of business administration, master of education, and doctor of philosophy. In addition, work leading to advanced certification is offered in certain fields of education. Degree programs have been established in the areas of business administration, chemistry, economics, education, history, political science, psychology and sociology. In

other academic areas graduate work is offered, and additional degree programs are in process of development.

From its beginnings, graduate education at UMSL has been guided by four broad purposes: development of excellence in scholarship; encouragement of creative productivity in research; fostering of the highest standards in professional competence and commitment; development of skill in the communication of knowledge. Responsive to the unique and comprehensive demands of the St. Louis region, the university has moved rapidly in the development of specialized facilities, of a distinguished and creative faculty, and of appropriate graduate programs to achieve these objectives.

ST. LOUIS GRADUATE ENGINEERING CENTER

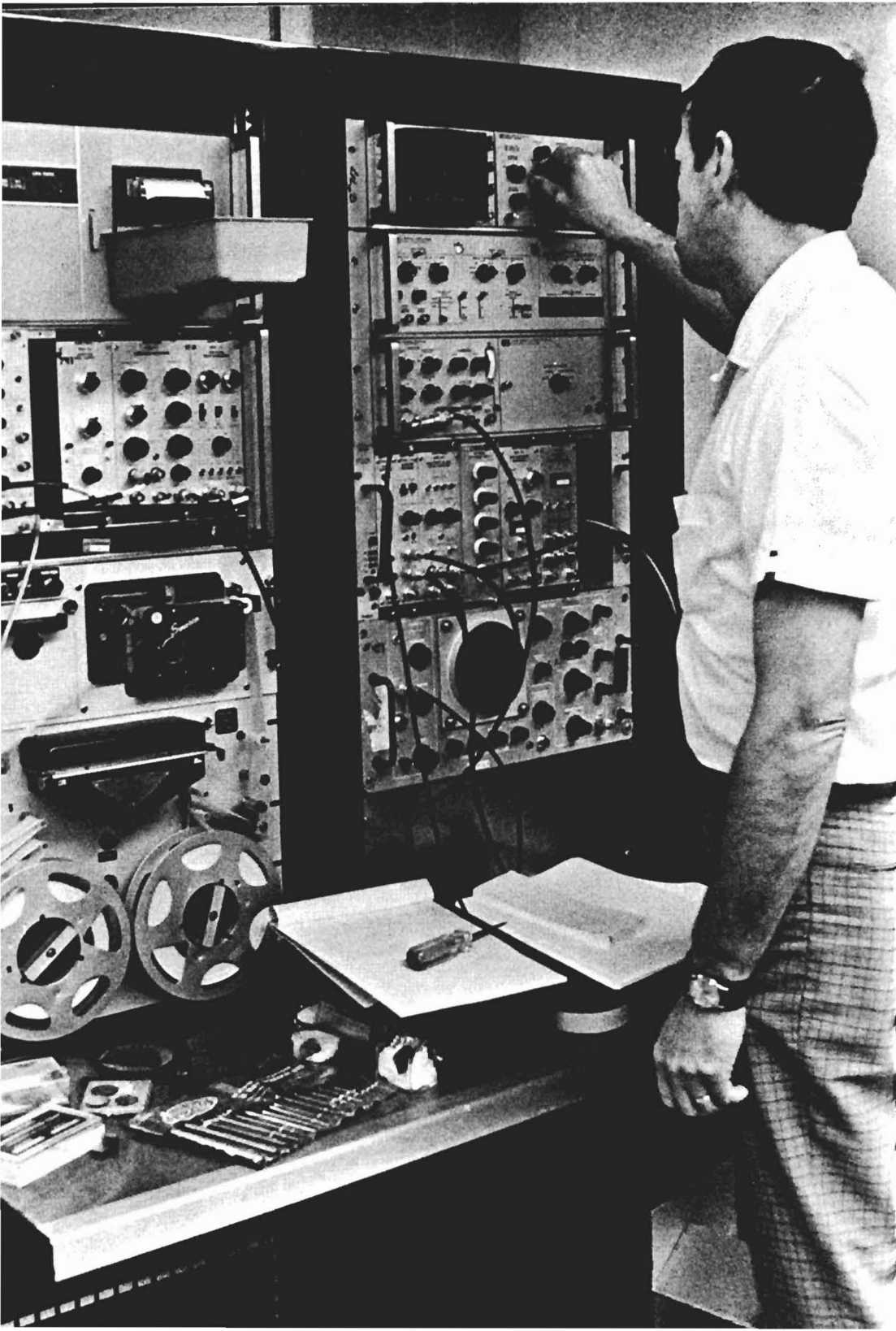
The St. Louis Graduate Engineering Center was established in St. Louis

GENERAL INFORMATION

in 1964 as part of the continuing education program of the Extension Division of the Rolla campus of the University of Missouri. The Center offers St. Louis area residents an opportunity to pursue graduate work in degree programs in engineering offered by the University of Missouri-Rolla. In 1968 the Center was located on the campus of the University of Missouri-St. Louis. Master of science degrees in ten fields are currently offered through the Center: aerospace, civil, electrical, chemical, environmental, mechanical, and metallurgical engineering; engineering management; engineering mechanics; and computer science.

Information concerning these programs may be obtained from the Director, St. Louis Graduate Engineering Center, University of Missouri-St. Louis.





Specialized Centers and Research Facilities

Apart from the research facilities of separate departments and divisions, a number of specialized centers and offices have been created to provide coordination of services for interdisciplinary study and research. In some cases these facilities are located on and directed by the St. Louis campus of the University of Missouri. In other cases they are operated under University-wide research administration and are made available in a coordinated way to campus researchers. In still other instances these facilities have been developed through consortium arrangements with various institutions or organizations, including a number of organizations in the St. Louis metropolitan area.

The Office of Research Administration provides general direction and guidance for research centers and facilities. In addition the Office provides assistance to student and faculty researchers in the development of special facilities and support for research activities.

ANIMAL RESOURCES OFFICE

The function of the Animal Resources Office is to coordinate affairs related to the use of animals in research on the four campuses of the University of Missouri. The development and use of facilities, the housing, care and use of animals, and programs of veterinary

care, disease control and prevention are major concerns of this office. The director of animal resources serves as the principal liaison between the University of Missouri and governmental agencies charged with regulatory responsibility related to the use of animals. The office establishes minimum standards and reviews standards established within the university for the housing, care and use of animals in relation to Federal regulations and the requirements of granting agencies.

CENTER OF COMMUNITY AND METROPOLITAN STUDIES

The Center of Community and Metropolitan Studies was created by the University Board of Curators in the spring of 1965, to perform a threefold function of research, community service and teaching. In order to promote a more comprehensive approach to the study and solution of urban problems, the Center attempts to achieve as wide a degree of inter-disciplinary cooperation as possible. The seven staff members who currently hold appointments in the Center reflect this approach, coming as they do from a variety of disciplines, including: Sociology, Economics, Business Administration, and Political Science.

Since education is viewed as one of its primary functions, an on-going effort is made to involve students in the Center's

urban research. As part of this effort, the Center employs a limited number of graduate research assistants, and, in addition, a program is being developed to place qualified students in staff positions in area agencies, giving them a chance to acquire valuable knowledge and skills, and at the same time, to make significant contributions to the agencies in which they work.

Most of the Center's research focuses on the immediate problems of the City of St. Louis and the Metropolitan Area. Recent projects have concentrated primarily in the areas of housing, mass transit, employment, public finance, crime and drug addiction. Frequently, the Center cooperates directly with other university departments and with various government and private agencies, in order to facilitate the communication of information and reports to local citizens and policy makers.

In addition to its basic and applied research efforts, the Center is concerned with developing new methods of information collection, storage, retrieval and analysis, and with developing and refining new problem-solving techniques—all as part of its ultimate goal of becoming a more effective tool to study and hopefully improve the conditions of the St. Louis area.

CENTER FOR INTERNATIONAL STUDIES

Organized in the fall of 1968, the Center for International Studies supports research activities, seminars and conferences directed at: (1) expanding understanding of international interactions; (2) investigating domestic sources of externally directed national policies; (3) improving methods and techniques of research in international affairs; (4) improving methods and techniques for communicating

information and research findings in non-academic as well as academic settings.

The Center staff consists of a director, research associates, student assistants and secretarial and clerical personnel. Research associates hold annually renewable appointments in the Center, typically with joint appointments in academic departments.

The Center sponsors interdisciplinary and multidisciplinary courses and assists in staffing courses within individual departments. Ad hoc seminars may be arranged to meet specific needs or interests of faculty or of graduate or undergraduate students. The Center similarly sponsors conferences and seminars, including an interdisciplinary Faculty Seminar in International Studies which meets frequently to discuss research methods, projects and findings.

The Center issues two types of publications: a Monograph Series, and an Occasional Paper Series. Included in the Monograph Series are the proceedings of Center conferences and special studies reporting the results of completed research projects. Included in the Occasional Paper Series are reports of preliminary findings of uncompleted research projects. The Series reduces normal publication delays and allows an investigator to obtain early reactions to his research while it is still in progress.

COMPUTER CENTER

Computer Center facilities on the four campuses of the University of Missouri provide excellent modern computing services, available to faculty, staff and students for instructional, research and administrative computing needs. A wide range of facilities on all four campuses are available on a university-wide basis.

Computer facilities on the St. Louis campus include an IBM 1130 computing

system, which is linked to an IBM S/360 model 65 computer on the Columbia campus. The S/360 has a core capacity of three megabytes. Terminals for time sharing and an optical scanner are also available.

Computer Center staff members are available for consultation, programming and keypunching services. The inventory of programs includes all standard IBM software plus several large statistical packages and in-core compilers.

ENVIRONMENTAL HEALTH CENTER

The Environmental Health Center was established by the Board of Curators in 1965 as a system-wide mechanism for the stimulation and coordination of research, teaching and public service in areas related to man's environment and its effect on public health and the quality of living. The Environmental Health Center Committee includes members from the four campuses of the university and from related agencies. The director of the Center serves as executive secretary of the committee. The Center exercises responsibility for the following two broad research activities: **Environmental Surveillance Center** The Environmental Surveillance Center is concerned with study of birth defects in humans and swine and with exploration of environmental factors which may contribute to birth defects.

Environmental Trace Substances Center The Environmental Trace Substances Center is concerned primarily with research, training and analytical services relating to the assessment of the chemical composition of the environment. Special emphasis is given to the development of analytical methods capable of handling the large numbers of analyses necessary for environmental research. The principal function of the facility is to stimulate and support environmental studies

within the university, but the Center serves also as a regional and national center for ecological investigations.

INSTITUTE FOR SYSTEMATIC AND EVOLUTIONARY BOTANY

In 1970 a consortium of four universities in the St. Louis metropolitan area was formed to develop instructional and research programs at the graduate level in the area of systematic and evolutionary botany. The participating institutions include, in addition to UMSL, Washington University, St. Louis University and Southern Illinois University-Edwardsville. The program operates in conjunction with the Institute for Systematic and Evolutionary Botany of the Missouri Botanical Garden (Shaw's Garden), one of the principal centers for botanical research in the United States. Under the consortium, the faculties, facilities and collections on the four campuses and at the Garden are shared for certain purposes, including the large herbarium and library at the Garden, greenhouse facilities, scanning and transmission electron microscopes, a tropical field research station in the Canal Zone, and the extensive course offerings of the four universities.

INTER-UNIVERSITY CONSORTIUM FOR POLITICAL RESEARCH

The University of Missouri-St. Louis is a member of the Inter-University Consortium for Political Research — an academic partnership between the Center for Political Studies at the University of Michigan and over 140 colleges and universities in the United States and abroad.

The Consortium is an interdisciplinary, inter-university research and training facility for both students and faculty in the social sciences. Through various Consortium Archives students and

faculty have direct, personal access to a variety of multi-purpose data of a socio-political nature that may serve a variety of research and training needs. The UMSL Computer Center provides a full range of data processing services for Consortium resources.

Students and faculty are also eligible to participate in the Consortium's Summer Training Program. Intensive interdisciplinary work for historians, political scientists, sociologists and other social scientists is provided through a set of eight week courses.

THE LIBRARY

The Thomas Jefferson Library has a shelf capacity of 240,000 volumes and will seat approximately 900 readers. The collection currently contains 182,103 volumes, 7,836 reels of microfilm, 507,878 microcards and microfiche, and 81,144 government documents. The library subscribes to 2,556 serial publications. An "approval gathering" plan adds approximately 14,000 currently published books in the English language to the collection annually. The collection is growing at the rate of nearly 50,000 volumes per year.

With the aid of microfilm copies of card catalogs, a teletype, and courier service, any of the more than 2,000,000 volumes which comprise the collections of the four campuses of the University of Missouri may be obtained in a few days. Materials from other research collections outside of the University of Missouri may be obtained by inter-library loan for those students engaged in thesis research.

MASUA TRAVELING SCHOLAR PROGRAM

The Mid-America State Universities Association, of which the University of Missouri is a member, serves as coordinator for a traveling scholar

program among its member institutions. The program is designed to extend opportunities for graduate study and research by enabling doctoral students to pursue advanced studies for short periods of time at universities other than their own. Additional information may be obtained from the Office of the Graduate School.

OFFICE OF INDUSTRIAL DEVELOPMENT STUDIES

The Office of Industrial Development Studies was established in 1956 by the University of Missouri and the Missouri Division of Commerce and Industrial Development. The Office was assigned the responsibility of providing the university's research capability in support of industrial development studies, public and private.

Research is performed in most instances by experts on the four university campuses. Certain studies are partially or totally prepared by staff of the Office of Industrial Development Studies, all of whom have had practical experience in their fields.

The Office of Industrial Development Studies is administered by the director of Industrial Research and Extension, an arrangement that allows liaison with manufacturers through University of Missouri Industrial Extension Agents. The arrangement ensures responsiveness to interests, opinions and needs of industry throughout the state.

Services are available to industrial development organizations, governmental bodies and private firms in such areas as market studies, product feasibility studies, plant location studies and urban-rural industrial studies.

The Office draws assistance from specialized research centers on the four campuses concerned with problems related to industrial development. These include such subjects as materials use

and development, management development, urban problem solving, business research, manpower, natural resources, planning opinion surveys and others.

PUBLIC OPINION SURVEY UNIT

The Public Opinion Survey Unit of the Research Center, School of Business and Public Administration, University of Missouri-Columbia, consists of a survey research organization and a data archive with a branch in St. Louis. The POSU survey research organization offers services to faculty, students, governmental agencies and private organizations in the following areas: research design; sampling; questionnaire construction; field interviewing; coding, tabulation and data processing; analysis of data.

POSU maintains a field staff of 140 professional interviewers in close proximity to its statewide sampling points. It conducts a minimum of two statewide amalgam surveys per year as well as surveys of special population groupings upon request.

The data archive contains a large body of social scientific data on punchcards or tape. Holdings have been acquired from four sources: POSU field surveys; data collected by the Inter-University Consortium for Political Research; studies conducted by other scholars, especially in the area of comparative American state politics; comparative cross-cultural studies acquired on an ad hoc basis from sources such as the International Data Library and Reference Service. POSU has recently been admitted to membership in the Council of Social Science Data Archives, an international network facilitating the exchange of primary data collected by social scientists, private survey organizations and governmental agencies.

RESEARCH REACTOR

The Research Reactor is a university-wide facility located in the University Research Park, south of Columbia, Missouri. The facility includes a fluxtrap reactor currently operating at a power of five megawatts and offering the highest neutron flux of any university reactor in the country. Seventeen research laboratories specifically designed for research involving radiation are associated with the reactor.

The reactor provides a variety of experimental facilities, including four pneumatic tubes servicing seven laboratories, six beam ports, twelve high flux irradiation positions adjacent to the reactor and a neutron radiography facility.

The facilities of the Research Reactor are available to all staff members and graduate students of the University of Missouri. A professional staff is responsible for operation and maintenance of the facility and a technical staff is available on a consulting and advising basis to researchers.

A Nuclear Science Group provides services in trace element research, radioisotope production, nuclear chemistry research and activation analysis.

THE SINCLAIR COMPARATIVE MEDICINE RESEARCH FARM

The Sinclair Comparative Medicine Research Farm is a 563-acre, university-wide research facility located approximately five miles south of Columbia, Missouri. Animals are utilized as the model for human health-related conditions in the study of chronic diseases and aging. Both large-animal and small-animal facilities are available. The center includes offices, laboratories and animal quarters and is staffed by approximately 35 full-time employees

SPECIALIZED CENTERS and RESEARCH FACILITIES

and one professional staff member in each of the following disciplines: biochemistry and nutrition, biostatistics, clinical medicine, genetics, microbiology and pathology.

Any interested investigator or graduate student may use the Sinclair facility. Projects are currently in progress from various University of Missouri campuses, as well as other universities. A wide variety of research projects and animal species are available for cooperative studies.

SOCIAL AND BEHAVIORAL SCIENCES LABORATORY

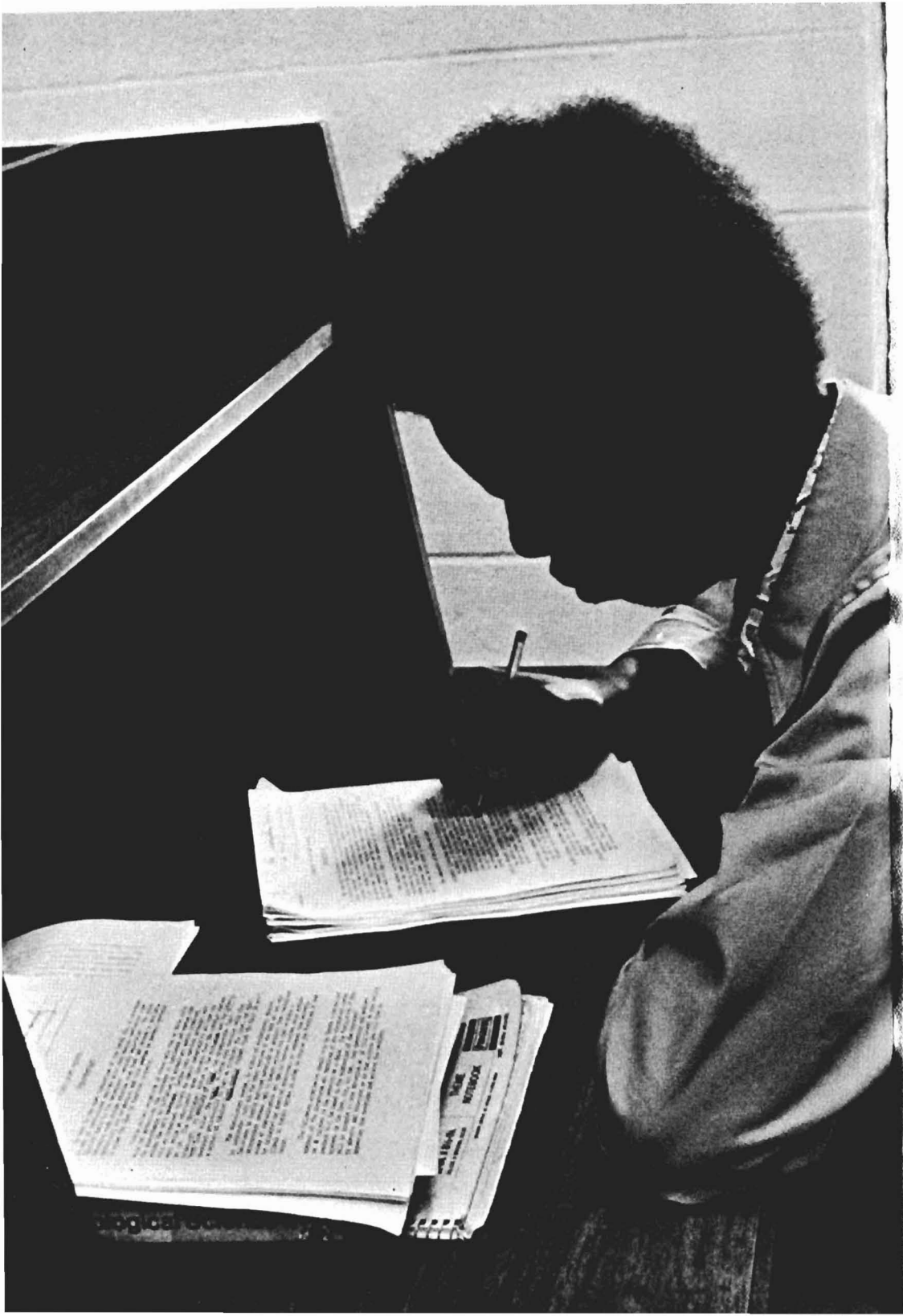
The Social and Behavioral Sciences Laboratory provides a controlled and flexible experimental setting for teaching and research at the University of Missouri-St. Louis. The laboratory incorporates both small group interaction and simulation facilities, as well as consultation services, audio-visual, and closed circuit video facilities for teaching and research. Direct computer access will be available beginning in the fall of 1972, with plans for the establishment of data archives

currently being formulated. As a service facility, the Social and Behavioral Sciences Laboratory is available to both students and faculty.

WATER RESOURCES RESEARCH CENTER

The Water Resources Research Center encourages and coordinates university-wide research in water resources. Its purpose is to explore problems related to preservation and development of adequate supplies of pure water and to prepare specialists in the water resources field. Principal emphasis is given to implementation of the Federal Water Resources Research Act of 1964, an act which provides allotment and matching grant funding by the U. S. Department of the Interior. Funds available through the Center may be used for support of water research in a variety of related fields. Both basic and applied research studies are supported. Interdisciplinary research involving various academic departments of the university is encouraged.





Policies and Regulations

ADMISSION

Any student with a bachelor's degree or its equivalent from an accredited college or university may apply for admission to the Graduate School. Applications are reviewed by committees of the department or school within which the student proposes to pursue graduate study and by the Graduate School. Within the limitations of department facilities, a student may be admitted to the Graduate School if his previous academic record and background suggest a reasonable likelihood that he will succeed in his proposed program. No student will be admitted except on the recommendation of the department or school involved.

As a matter of university policy, applications for admission to the Graduate School are reviewed without regard to race, color, sex or national origin.

The policies of the University of Missouri-St. Louis comply with the provisions under Title VI of the Civil Rights Act of 1964. No person in the United States shall, on the grounds of race, color or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity of the university.

Application Inquiries concerning admission to the Graduate School and

requests for application forms should be addressed to the director of admissions, University of Missouri-St. Louis. With each application form sent, a list of admission requirements established in the particular degree program will be enclosed. Application forms for financial assistance will also be sent on request.

To ensure consideration, completed applications for admission together with additional required materials should be filed with the director of admissions by the following dates: July 1 for the fall semester; December 1 for the winter semester; May 1 for the summer term.

Where an application is accompanied by a request for financial aid, the last date for acceptance is normally March 15. Certain departments with heavy enrollments have established earlier final dates, both with respect to admission and to financial assistance. Inquiries concerning admission to the Graduate School should therefore be made as early as possible.

Applicants may be admitted to a degree or certification program only if they have taken the Aptitude and Advanced tests of the Graduate Record Examination (GRE). In the master of business administration program, the Admissions Test for Graduate Study in Business (ATGSB) is required in place of the GRE. Scores on these examinations must be presented at the time an

application for admission to a degree or certification program is made. Applicants who have not previously taken the examination are encouraged to apply for the examination at the earliest test date possible. Test dates are listed in the Calendar of the Graduate School on page 2. Applications must be submitted approximately four weeks in advance of the test date. Information about the examination and application forms may be obtained from the Admissions Office.

Admission with Regular Status For admission with regular status, an applicant must: (1) hold a baccalaureate degree from an accredited institution and have completed studies essentially equivalent to those required for a baccalaureate degree at the University of Missouri; (2) demonstrate command of the English language; and (3) present clear evidence of his ability to undertake advanced academic work in his chosen field of instruction, including, where appropriate, the conduct of original research.

Where a candidate's undergraduate training has been deficient in its preparation either for general graduate study or for advanced specialized study in a particular discipline, he may be admitted with restricted status. He may be required to complete certain specific undergraduate courses before he will be allowed to continue in graduate study.

Superior work as a graduate student in another institution or in restricted status at the University of Missouri-St. Louis may be regarded as adequate evidence of a student's ability to perform satisfactorily at the graduate level. Graduate students will be admitted with regular status only to departments or schools offering degree programs at the time of application.

Additional requirements for admission may be established within a particular degree program. Final decisions on

admission are made by the Graduate School on the recommendation of the appropriate department or school.

Admission with Restricted Status An applicant who fails to qualify for admission with regular status will automatically be considered for admission with restricted status. Such admission entitles the student to enroll in graduate courses in all subjects offered by the university where the student meets departmental requirements. Department permission is required for enrollment in each graduate course. Credit earned by a restricted graduate student is not automatically accepted in graduate degree programs. On the recommendation of the student's major adviser and his department, with the approval of the graduate dean, credits so earned may be accepted in a student's degree program if he is subsequently enrolled as a regular student.

A student admitted as a restricted student shall either be transferred to regular status or dropped from the Graduate School when he has completed no more than 12 hours of work at the university. The change shall be made on the recommendation of the department or school with the approval of the graduate dean. Approval will normally be given only when a student has maintained a grade point average of 3.0 or above. In particular degree programs additional requirements may be established.

Admission as a Special, Non-Degree Student Depending on the student's qualifications as well as the availability of space and facilities, a student who is not pursuing a degree at UMSL may be permitted to enroll in selected graduate courses. Such special, non-degree students must apply to the Graduate School in the normal manner. Enrollment requires the permission of both the department or school involved and the graduate dean.

A student admitted as a special,

non-degree student who wishes subsequently to enroll in a certificate or degree program must apply separately for admission to the program. Where appropriate, graduate credit earned as a special, non-degree student may be applied toward a certificate or degree program, but such work may not total more than one-third of the hours required in the program.

Admission as an Unclassified Student A student who has been denied admission to the Graduate School may request admission to the University as an unclassified student. As an unclassified student he may not enroll in graduate courses and he may not receive graduate credit for 300-level courses in which he may enroll. In some departments students who cannot be admitted to graduate programs are encouraged to enroll in remedial undergraduate programs as unclassified students. Depending on their success in these programs they may subsequently become admissible to a graduate program.

Foreign Applicants Although requirements for admission and final application dates are the same for foreign applicants, several special considerations apply. Because the evaluation of foreign credentials may take considerable time, applicants are encouraged to submit application materials well in advance of regular deadlines. In addition to official transcripts, applicants are asked to provide a summary of educational experience, a statement on anticipated means of support during the period of graduate study, and a careful record of courses completed, performance on special examinations and degrees awarded. Foreign students may not be admitted without a demonstrated competence in English and are required to present scores from the Test of English as a Foreign Language (TOEFL) before an admission application can be reviewed.

Enrollment of Undergraduate Students in Graduate Courses An undergraduate student with an exceptional record at the University of Missouri-St. Louis may be enrolled in graduate courses in the last year of his undergraduate program. Graduate credit for such course work will be given only if each course is approved in advance by the Graduate School on the recommendation of the department or school involved. No undergraduate student will receive graduate credit for a course unless he is registered in the Graduate School.

A student who graduates with an excess of undergraduate credit without having registered in the Graduate School will not subsequently receive graduate credit for that work. In no case may the same credits be applied to both an undergraduate and graduate degree program.

Intercampus Exchange Program A graduate student in good standing on any campus of the University of Missouri will normally be permitted to enroll in graduate courses at the University of Missouri-St. Louis. He will be designated a non-matriculated graduate student. A separate application must be filed each semester and must be approved by the student's adviser and by the Graduate Office at UMSL. Application forms may be obtained from the Graduate Office on the student's home campus.

Postdoctoral Study Holders of the doctorate and similarly qualified individuals who wish to pursue special investigations at the university may be appointed post-doctoral research fellows or visiting fellows by the dean of the Graduate School on the recommendation of the appropriate division of the university. Such appointments normally include the right to the use of university facilities. Inquiries should be addressed to the Graduate School or the appropriate department chairman or faculty member.

Leave of Absence A graduate student who is forced to interrupt his study for a period of one year or more should request a leave of absence from the university. In consultation with his department and adviser the student should define the modifications in his program the leave of absence will require. The request should indicate the purpose of the leave and the date when the student expects to return to the university. Approval of the Graduate School is required. A leave of absence does not affect the maximum time limitation set for a degree program, unless a specific exception is approved.

FEES AND EXPENSES

Detailed information regarding fees and expenses is furnished in the University of Missouri-St. Louis *General Catalog*, the *Schedule of Courses*, and a pamphlet, *Tuition and Residence Rules*, available from the Cashier's Office.

The University reserves the right to change fees and other charges at any time without advance notice.

All university fees must be paid in full at the time of registration as a condition of admission to classes. Students who pre-register must pay fees by the announced deadline or the advance registration will be cancelled and the student will be required to register again and pay fees during the regular registration period as indicated on the university calendar. Registration is not complete until all fees are paid. Partial payment or deferment of fees cannot be honored.

For the purpose of all rules regarding enrollment fees, courses taken as a hearer and courses taken for reduced credit will be counted at their normal credit value in computing the amount of fees to be paid. Students enrolling in zero credit courses are required to pay fees according to the equivalent credit of the course.

A student who presents a check to the university in payment of student fees,

which for any reason is not honored by the bank upon which it is drawn, will be reinstated only upon payment of the amount of the check and a reinstatement of \$5. In addition, a fee for handling the returned check will be charged.

Incidental Fee All students enrolled in the university are required to pay an Incidental Fee as follows:

Regular Semester	
Hours Credit	Incidental Fee
9 or more	\$250.00
Summer Session	
4 or more	\$115.00

For any other sessions not specified above and for partial enrollments the Incidental Fee shall be calculated at the rate of \$29.00 per credit hour.

Non-Resident Tuition Fee A Non-Resident Tuition Fee, in addition to the Incidental Fee and other required fees, must be paid by any student who at the time of registration has not been a resident of Missouri for a period of at least one year immediately preceding such registration. (Definition of "residency" is outlined in the University of Missouri pamphlet "Tuition and Residency Rules" available in the Cashier's Office.)

It is the duty of each student to register under the proper residence and pay proper tuition fees, and it is also his duty to raise the question if there is a possibility that he is subject to such tuition fees.

The Tuition Fee, in addition to the Incidental Fee, for graduate students who are not residents of Missouri is:

Regular Semester	
Hours Credit	Non-Resident Fee
1-6	No Fee
7	\$150.00
8	\$300.00
9	\$400.00
10 or more	\$500.00
Summer Session	
1-3	No Fee

Hours Credit	Non-Resident Fee
1-3	No Fee

4	\$.120.00
5 or more	\$.230.00

The Non-Resident Tuition Fee will not be charged the following categories of graduate students who, for purposes of the fee, will be granted residence status:

(1) Graduate students holding appointments as graduate assistants, if the appointment is a quarter-time appointment or greater.

(2) Graduate students holding fellowships which do not include payment of tuition.

Student Union and Activities Fee Each student registered in the university is required to pay a University Center and Activities Fee as follows:

Regular Semester	
Hours Credit	Fee
10 or more	\$24.50
Summer Session	
Hours Credit	Fee
5 or more	\$12.25

For any other sessions not specified above and for partial enrollments the University Center and Activities Fee shall be calculated at the rate of \$2.45 per credit hour or fraction thereof.

This fee is to be used for programs of broad interest within the university community. The fee is distributed as follows: bond retirement on Multi-Purpose Building: \$2.50; bond retirement on University Center: \$10.00; Athletics: \$7.00; Student Activities: \$5.00.

Music Fee In addition to the Incidental Fee there is a fee for applied music as follows:

1. For Music Majors: A single fee of \$45.00 per semester to cover all required applied music.

2. For Non-Music Majors: A fee of \$45.00 per semester for each area in which the student enrolls for applied music, the defined areas being piano, voice, woodwinds, brass, percussion and strings.

Late Registration and Petition Fees Any student registering after the close of the regular registration period shall pay a late registration fee of \$25.00.

Any student dropping, and/or adding, one or more courses at any one time, shall pay a fee of \$5.00.

Parking Fee There will be a parking fee for each motor vehicle used by a student on campus based on \$2.50 per credit hour up to a maximum of \$25.00. The daily fee charge for students who do not drive regularly is \$.50.

The fee for motorcycles and motor-scooters on the St. Louis campus is fixed at one-half the above fees.

Detailed information on parking regulations and fee refunds is available from the Cashier's Office.

Transcript Fee A fee of \$1.00 is charged for each official transcript of credits. A fee of 50 cents is charged for all photostatic copies of credits.

Diploma Fees A fee of \$5.00 is charged for each degree conferred by this campus. A \$2.00 fee is charged for each certificate awarded.

Thesis and Dissertation Fees The following fees are charged in connection with the submission of a thesis or dissertation.

For the master's degree, a \$5.00 thesis binding and microfilming fee;

For the doctor's degree, a \$30.00 dissertation binding and microfilming fee.

Final Semester Incidental Fee A candidate for a graduate degree who has completed all requirements for a degree except the filing of a thesis or dissertation and/or the taking of a final examination must register for at least one credit in the final term in which he is to receive the degree. Only if he is so registered may he file an application for a graduate degree.

Student Insurance An optional accident and sickness insurance plan is available at low cost to students and their dependents. Information concerning premiums and

coverage is available upon request from the Cashier's Office.

Diplomas Held for Delinquent

Indebtedness A student is required to clear all delinquent indebtedness to the university before a diploma may be released or transcript issued.

Refund of Fees

Regular Semester	
Withdrawals	Refund
Before the day classwork begins	Full refund less \$10 for cost of handling registration.

Within two calendar weeks from and including the day classwork begins 70% refund

After two calendar weeks and including six calendar weeks 50% refund

After six calendar weeks No refund

Summer Session	
Before the day classwork begins	Refund
Before the day classwork begins	Full refund less \$10 for cost of handling registration.

Within one calendar week from and including the day classwork begins 70% refund

After one calendar week and up to including three calendar weeks 50% refund

After three calendar weeks No refund

Refund of Parking Fees Students leaving school or dropping parking for which they have paid fees will receive upon return of scraps of their sticker a refund of fees paid in accordance with the following schedule:

Regular Semester	
Schedule of refunds	
1st through 4th week	75% refund
5th through 8th week	50% refund

9th through 12 week	25% refund
13th week and after	No refund

Summer Session

Schedule for refunds

1st through 2nd week	75% refund
3rd through 4th week	50% refund
5th through 6th week	25% refund
6th week and after	No refund

GRADUATE ASSISTANTSHIPS AND STUDENT SUPPORT

Teaching Assistantships Most departments with established graduate programs offer teaching assistantships to qualified graduate students. Appointments are normally half-time appointments and carry stipends which in the 1971-72 academic year range generally from \$3,300 to \$3,700. Holders of assistantships are required to pay all incidental fees, but they are exempted from the non-resident tuition fee. Holders of assistantships normally register for a maximum of nine credit hours each semester.

Teaching Assistant appointments are made directly by the departments, and inquiries and applications should be addressed to the appropriate chairman. Applications should be submitted no later than March 15 for the fall term and October 15 for the winter term. Some departments observe different deadlines, and applications should be submitted as early as possible. Appointments are normally announced by April 1 for the fall term and by November 1 for the winter term.

Research Assistantships A small number of research assistantships are available in some departments and schools. Appointments are made by the Graduate School on the recommendation of the appropriate division. Conditions of appointments are generally similar to those of teaching assistants. Inquiries should be addressed to the department or school or to the Graduate School.

Fellowships and Scholarships A small number of fellowships may be available for graduate students. Awards are made by the Graduate School on the recommendation of a department or school. Awards are based in part on need. Amounts do not normally exceed the incidental fees.

Certain departments or divisions of the University have available a limited number of traineeships or fellowships. For information consult the appropriate department.

Loans The university participates in the National Defense Student Loan Program, the Missouri Guarantee Loan Program, the federally Insured Student Loan Program, the College Work-Study Program, and other support programs. Students who wish information on these programs or on veterans' services should contact Financial Aids for Students, Admissions Office, 108 Administration Building, 8001 Natural Bridge Road, St. Louis, Missouri 63121.

STUDENT SERVICES

Housing There is no university owned or approved housing at UMSL. The Office of the Dean of Student Affairs and the Personnel Office maintain listings of rooms, apartments and houses for rent and real estate for sale for faculty, staff and students.

Counseling Service The Counseling Service provides professional counseling to students at no expense, including assistance with personal, vocational or academic difficulties. The Student Inter-Faith Council also provides personal counseling services for students.

University Placement Office The University Placement Office offers a variety of services and acts as a clearing house for full-time and part-time job opportunities off-campus. Representatives from businesses, government agencies and school districts conduct on-campus

interviews through the University Placement Office during the school year.

For alumni seeking employment, the University Placement Office maintains a continual listing of full-time positions. Also available at no cost to the alumnus is the GRAD program, a computerized resume referral system operated by the College Placement Council for those seeking positions in business and industry. This program gives nationwide scope to the registrant's job search.

In addition, the Placement Office maintains listings of school and college vacancies of interest to holders of graduate degrees.

University Bookstore The University Bookstore is the campus headquarters for the ordering and selling of textbooks and supplementary reading materials including paperback books. Small stationery items and paper supplies are also available through the bookstore.

Recreational Facilities A large, outdoor swimming pool is open to faculty, staff and students during the summer. Family and single membership passes for the entire swimming season may be purchased, or students may swim on a daily fee basis. Tennis courts, hard surfaced volleyball and basketball courts and various sports equipment items are available for student's use. The University Center houses a student lounge, the University Bookstore, meeting rooms, dining room facilities and snack bar facilities, and offices for Student Activities. The Multi-Purpose Building provides a 6,000-seat gymnasium, physical conditioning facilities, indoor swimming pool, handball courts and classroom and administrative facilities.

Student Health Center The Student Health Center provides out-patient medical care primarily for students, and emergency medical care for all members of the university community.

Two St. Louis physicians are available on a part-time basis at the Center. They

are assisted by a permanent staff including a full-time registered nurse, part-time registered nurse, licensed practical nurse and secretarial staff.

Services offered at the Health Center include the treatment of illnesses and the maintenance of confidential student medical history forms and health records. A minimal amount of laboratory testing is done in the Center, and equipment and supplies are continually being acquired to make services more complete. Patients are referred to health facilities in the St. Louis area when needed care is beyond the limitations of the Center. The Campus Security Office assists in the event of medical emergencies.

The Student Health Center is open to serve both the day and evening student population with hours from 7:30 a.m. to 9:30 p.m. Monday-Thursday, and from 7:30 a.m. to 5:30 p.m. on Friday.

REGISTRATION, COURSES, AND GRADES

Permit to Enroll and Registration A new student who has qualified for admission to the Graduate School will be issued a permit to enroll and a registration packet. Subsequently, registration materials will be made available each term as long as a student remains in good standing in the Graduate School.

To remain in good standing in the Graduate School, a student must enroll during at least one term each calendar year. If he fails to do so and has not been granted a leave of absence, he will be dropped from the Graduate School. In some programs students may be required to enroll each term.

A student who has been dropped from the Graduate School or from a graduate program and who wishes subsequently to continue must submit a new application for admission.

Pre-Registration Enrolled students may complete registration for the following

semester during pre-registration periods, usually held during November and April. Student registration is not complete until all university fees are paid. A student who pre-registers must pay his fees by the announced deadline or his advance registration will be cancelled (see page 34.)

Maximum Registration In most programs, the normal course-load for a full-time student enrolled in the Graduate School is nine to twelve hours during a regular semester and five to six hours during a summer term. In the master of business administration program, or with special permission in other programs, students may register for fifteen hours.

A graduate student employed full-time may register for no more than six hours of course work. A student employed part-time will have his course-load adjusted accordingly.

Petitioning Into or Out of a Course A student entering or withdrawing from a course after registration, but before the beginning of that course, must secure the approval of his adviser and the graduate dean.

Entering a Course in Progress A student who wishes to enter a course in progress must secure the approval of the course instructor, the student's adviser, and the graduate dean. Only under exceptional circumstances may a student enter a course after the first week of a semester. A \$5.00 fee is charged for one or more petitions for change of course filed at any one time.

Dropping a Course With the approval of his adviser and the graduate dean, a student may drop a course before the end of the fourth week without receiving a grade.

After the end of the first four weeks of the semester and until the end of twelve weeks (or from the end of the first two weeks of the summer session and until the end of six weeks), a student may withdraw from a course with a grade of

"excused" providing he is passing the course at the time of his withdrawal and his withdrawal is approved by his instructor, his adviser, and the graduate dean. Otherwise, he will receive a grade of "F." Any student who ceases to attend classes without officially dropping a course will receive a grade of "F."

Course Level Courses for which graduate credit is given are numbered at the 300- or 400- level. Courses in the 400 series are exclusively graduate courses, and undergraduates may enroll in them only in exceptional circumstances with the special permission of the instructor, the department chairman, and graduate dean. Courses in the 300 series are for graduates and advanced undergraduates. In exceptional cases, with the permission of his graduate adviser, a graduate student may receive graduate credit for a 200-level course taken in a department other than the department in which he is pursuing a degree.

In most degree programs the bulk of course work required for a degree must be taken in 400-level courses. In all programs at least one-half the required course work must be completed in 400-level courses.

Institute and Workshop Courses Where appropriate to a degree program graduate credit may be given for participation in special institute and workshop courses. No more than six hours of such credit may be applied to a degree program.

Grading Policies Grades of graduate students in all courses which carry graduate credit are reported as "A", "B", "C", and "F." Graduate credit will not be given for a course taken on a Pass-Fail basis. The grade "A" is awarded for work of outstanding merit, "B" for work that is entirely satisfactory, and "C" for work that is acceptable only to a limited extent in fulfilling requirements for advanced degrees. The "D" grade is considered failing at the graduate level,

and will, therefore, not be used for graduate students. A grade of "A" is assigned four grade points per semester hour, a "B" three points, a "C" two points, and "F" no points.

A delayed grade may be recorded when a student's work is incomplete but otherwise worthy of credit. A delayed grade which is not removed within two regular semesters after the time it was recorded will be automatically replaced by an "F." In such cases the instructor in the course may subsequently change the "F" grade to another grade when all work has been completed.

A delayed grade recorded for a course in thesis or dissertation research will be left as a delayed grade until a final, regular grade has been reported by the instructor.

Standard of Scholarship, Probation and Dismissal Every graduate student enrolled in a degree or certificate program is required to maintain a grade point average of at least 3.0 in all courses for which graduate credit is given. If his grade point average falls below 3.0, he will be placed on probation. He will be dismissed from the Graduate School if his average falls below 2.0. Upon recommendation of his school or department he may be dismissed if his grade point average is lower than 3.0 when he has completed two-thirds of the number of hours required in his degree program or if he has been continued on probation two semesters or more and the department or school concludes that he is not making acceptable progress toward his degree.

Foreign Language Requirement There are no general foreign language requirements established by the Graduate School for advanced degrees. Where a department or school establishes a given level of competence in one or more foreign languages as required in a degree program, that competence shall be demonstrated in one of the following

ways as determined by the department or school:

(1) An examination administered by the department or school;

(2) Graduate School Foreign Language Test administered by the Educational Testing Service;

(3) Satisfactory completion of a language course at a specified level.

Evidence that the foreign language requirement has been satisfied shall be presented to the Graduate School in each case.

Withdrawal from the University

Withdrawal from the university is arranged through the Admissions Office. Students who leave the campus without formal withdrawal are given a grade of "F" in all courses.

REGULATIONS FOR MASTER'S DEGREE PROGRAMS

The following requirements and regulations apply to all those admitted to master's degree programs subsequent to the summer term, 1969. Each school, department or area of concentration establishes its own requirements in addition to the general requirements of the Graduate School identified in this section. For these additional requirements, see the specific program description. It is the responsibility of each graduate student to make certain that he has satisfied all school, department or area requirements as well as all general requirements.

Major Adviser Each graduate student admitted to a master's degree program will be assigned an adviser by the chairman or director of graduate studies of his major department or school. Prior to the date of each semester's registration, the student must consult with his adviser regarding his program and courses.

Course Requirement A minimum of thirty semester hours of courses carrying graduate credit is required in every

master's degree program. With the approval of the department or school and the graduate dean, transfer credits not to exceed one-third of the graduate degree program may be accepted from an accredited institution. Once admitted to the Graduate School a student must obtain departmental approval prior to enrolling in courses for transfer credit from other institutions.

Courses taken by correspondence may not be included as part of a degree program.

A student who has completed course credits in a certification program may transfer such credits into a master's degree program with the consent of the department or school. Such credits may be transferred only if they fall within the time limitations set for master's degrees.

Residence No less than two-thirds of the graduate credit required in a master's degree program must be completed in residence at the University of Missouri-St. Louis following admission to the program. Special courses such as institutes and workshops may not be included as part of the residence requirement. Except with special permission, residence must be completed in the last two-thirds of a student's degree program.

No period of full-time graduate study is required by the Graduate School for a master's degree, although a requirement for full-time study may be established in a particular degree program.

Time Limitation All work included in the degree program for a master's degree must be completed within a period of six years after initial enrollment in the degree program. Graduate work completed outside the six year period may not be included in a degree program. In connection with an authorized leave of absence, an exception to the time limitation may be approved.

Filing of Degree Program At some point

before he has completed one-half the number of hours required in his degree program, each graduate student, in consultation with his adviser, will file with the graduate dean a program of studies which must be approved by the department or school involved and the graduate dean. Graduate students whose degree programs require more than forty hours of course work must file a program before completion of two-thirds of the hours required.

Thesis and Comprehensive Examinations

No general thesis requirement is established for a master's degree, although a thesis may be required by some departments in a particular degree program. Where required, the thesis will be directed by a committee of three members of the graduate faculty appointed by the graduate dean on the recommendation of the department or school.

Comprehensive examinations, oral or written or both, are required in most programs for the master's degree. Each examination will be administered by a committee of no less than three members of the graduate faculty appointed by the graduate dean on the recommendation of the department or school.

Dual Master's Degrees With the approval of the department or school and the graduate dean, a graduate student who has completed a master's degree in a different program may transfer appropriate credits from the first program to the second, but the number of transferable credits shall not exceed one-third of the credit hours required by the second program.

With the approval of the departments or schools involved and the graduate dean, a graduate student may simultaneously pursue two master's degrees under the conditions that: (1) a maximum of ten hours of credit may be

overlapping or common to both programs; and (2) approval of both departments or schools must be obtained and program advisers assigned from both departments or schools before the student has completed twelve semester hours in either program.

REGULATIONS FOR DOCTORAL DEGREE PROGRAMS

The Ph.D. degree is based on evidence that the candidate has achieved a high level of scholarship and proficiency in research. The proficiency of the student and his ability to work independently are established by a series of qualifying and comprehensive examinations, and by the quality of the dissertation submitted.

Selection of an Adviser After admission to the Graduate School, the student who intends to qualify for the doctorate should so inform the chairman of the department or the dean of the school in his subject of specialization. Upon acceptance by the department or school as an *applicant* for the doctorate, the student, in consultation with the appropriate chairman or dean, and with the concurrence of the dean of the Graduate School, will select an adviser to assist in the planning of his program. The graduate dean will appoint the adviser, with notices to all concerned.

Residence Requirements Minimal residence requirements for the Ph.D. are the equivalent of at least three academic years of full-time advanced study beyond the bachelor's degree. Additional requirements may be set at the discretion of the department. The residence requirements may be fulfilled with part-time enrollment except that at least two consecutive semesters of full-time residence work on the St. Louis campus must be included in the last two-thirds of the program.

An acceptable master's degree in the field can, in general, count for no more than the first year of residence. Under special circumstances additional residence may be transferred.

The work included in a program for the doctoral degree must be completed within a period of eight years.

Qualifying Examination or Certification to Proceed. Upon completion of approximately one year of the residence requirements, the appropriate chairman or dean and the adviser may recommend to the dean of the Graduate School that the student pursue work toward the doctorate as a *pre-candidate* doctoral student. Such recommendation may be based upon a qualifying examination or other specified examination as well as the student's academic record.

At this time the student, with the approval of the chairman or dean and the adviser, will file a detailed program, except for the dissertation topic, with the dean of the Graduate School. After approval, copies will be filed with the student, the adviser, the chairman of the department and the divisional dean.

Advancement to Candidacy When the applicant has completed the major portion of the course work listed in his doctoral program and fulfilled whatever language and/or research skill requirements are established by the department, he may be eligible for advancement to *candidacy* to the Ph.D. degree. Such advancement is based upon an examination or series of examinations administered by the department under the supervision of the graduate dean. The examinations may be written, oral, or both.

Upon successful completion of the requisite examination(s), the applicant will be advanced to candidacy by the graduate dean on recommendation by the department.

The Dissertation Committee After acceptance as a candidate, the student,

in consultation with his adviser and appropriate members of the department, will ask the dean of the Graduate School to appoint his dissertation committee.

This committee will consist of at least three members of the graduate faculty, with one of the members from outside the department concerned. Dissertation committee members will be selected by the student and his adviser in consultation with the department and with the concurrence of the dean of the Graduate School.

Directions regarding the format of the dissertation may be obtained from the Graduate Office.

The Dissertation and Final Examination

Two copies of the dissertation, certified as complete and provisionally acceptable by all the members of the dissertation committee, will be submitted to the Graduate Office at least six weeks prior to commencement. The dean of the Graduate School, at his discretion, may assign the dissertation to other readers on or off the campus, or seek such other advice as he feels pertinent.

Upon acceptance of the dissertation, the dean of the Graduate School will appoint the Defense of Dissertation Committee to conduct the final examination. This committee will consist of all members of the dissertation committee and such other members of the graduate faculty as seem appropriate.

The Defense of Dissertation Committee will certify the final acceptability of the dissertation on the basis of the final examination.

The final examination will be open to all members of the graduate faculty.

Standard of Scholarship, Probation and Dismissal The student will not be allowed to continue in the program if any of the following conditions exist:

1. Failure to pass three cumulative examinations before the end of the second year as an *applicant* for the Ph.D. degree.

2. Failure to complete the work included in the program for the doctoral degree within a period of eight years.

3. Failure to remove by the end of the second year deficiencies indicated by the placement examinations.

Consistent with the graduate school regulations, every graduate student is required to maintain a grade point average of at least 3.0 in all courses for which graduate credit is given. If his grade point average falls below 3.0, he will be placed on probation. Upon recommendation of the department he may be dismissed if his grade point average is lower than 3.0 when he has completed two-thirds of the number of hours required in his degree

program or if he has been continued on probation two semesters or more and the department concludes that he is not making acceptable progress toward his degree.

At the end of each winter semester after grades have been reported, each graduate student will be reviewed by the department. It will be the responsibility of each research adviser to prepare summaries of the progress of those students under his supervision. For those students who have not selected research advisers, it will be the responsibility of the director of graduate studies to prepare the summaries. Students are encouraged to submit statements in their behalf.





Fields of Study

BUSINESS ADMINISTRATION

Professors

Sioma Kagan, Frederick E. May, Robert S. Stich, Fred J. Thumin, Emery C. Turner, dean, Dik Twedt

Associate Professors

Albert Ameiss, Howard Baltz, Philip Brumbaugh, Vincent B. D'Antoni, Donald H. Driemeier, associate dean, David P. Gustafson, Robert E. Markland, R. Frank Page, Donald Rogoff, Robert A. Schuchardt, Norbert C. Terre, James P. Tushaus, George C. Witteried, Lee Young

Assistant Professors

Richard W. Beatty, Andre B. Corbeau, Nicholas DiMarco, Luis V. Dominguez, Joseph P. Giljum, John F. Haneski, J. Ronald Hoffmeister, Charles P. Kuehl, Carl F. Meyer, Steven D. Norton, Paul Skjerseeth, Earl Wims, James Wong.

The master of business administration degree program at the University of Missouri-St. Louis provides a terminal professional management education. It is designed for those holding a baccalaureate degree or its equivalent from accredited institutions, including those whose undergraduate education is in the sciences, humanities or the arts. Students with undergraduate education in business administration or economics will pursue a modified degree program.

The course of study provides training in the fundamental areas of management education in a 60 semester-hour or two-year program. There is no thesis requirement.

The core curriculum of the program is designed to generate an appreciation of the concepts and interrelationships of four broad categories indigenous to management training:

1. The external legal, economic and political environment confronting organizations, and the interrelated problems various organizations face in operating within their environment.
2. The internal environment of various organizations and the complexities of human behavior in context with organizational goals *vis a vis* personal goals.
3. The broad functional facets of organizations including the terminology, concepts and interrelationship among accounting, financial, marketing, production and economic aspects of organizations.
4. The introduction to prospective managers of increasingly important quantitative decision models, the role and influence of the computer and the development of its facility for sorting, quantifying and appraising information of

a factual or quasifactual nature.

The total degree program is integrated by a course in policy formulation and administration.

Admission To be eligible for admission a person should hold a baccalaureate degree from an accredited college or university and must show high promise of academic success. Promise of academic success would normally be shown by consideration of undergraduate grade point average, score on the Admissions Test for Graduate Study in Business, and rank in class.

Generally these factors will be considered in combination rather than accepting or denying admission on the basis of a single criterion.

The Admissions Test for Graduate Study in Business is given five times each year by the Educational Testing Service of Princeton, New Jersey. This is a three and one-half hour aptitude test designed to measure certain mental capabilities important in the study of business at the graduate level. It tests ability to read, understand and reason logically with both verbal and quantitative material. It is not a measure of achievement or knowledge in any specific subject matter. Those who take it are neither required nor expected to have had undergraduate preparation in business subjects.

Application for the examination must be made directly to the Educational Testing Service. Additional information may be obtained through the Admissions Office or the School of Business Administration.

Previous Education in Business Degree candidates who have had prior education in the field of business administration may, on the basis of either transcript evaluation or examination, be excused from courses normally required of candidates with non-business backgrounds.

General Requirements No student can graduate with fewer than 39 hours of graduate work, 30 of which must be taken while enrolled as an M.B.A. candidate at the University of Missouri-St. Louis.

All degree candidates will take a course in each of the following areas: accounting, finance, marketing, management and quantitative management science.

All degree candidates will take a balanced and integrated comprehensive examination.

Mathematical Competence Each student is required to have taken the equivalent of Mathematics 101 (Survey Calculus) or Mathematics 102 (Finite Mathematics) at the time of admission or during the first semester (15 hours) of graduate work.

Completion Requirement The work included in a program for the M.B.A. degree must be completed within a period of six years after first post-baccalaureate enrollment. Graduate work taken previous to this time will not be considered valid.

Application An application for admission may be obtained by writing or calling: Director of Admissions, University of Missouri-St. Louis, 8001 Natural Bridge Road, St. Louis, Missouri 63121, telephone 453-5451. Additional information on the program may be obtained by contacting the director of the M.B.A. program, School of Business Administration, telephone 453-5881.

Required Basic Courses The following courses or their equivalents are required of all degree candidates:

- 410 Managerial Economic Analysis (3)
- 411 Analysis of National Economic Environment (3)
- 412 Public Policies Toward Business (3)

- 440 Financial Accounting: Theory and Practice (3)
- 450 Financial Management (3)
- 460 Administrative Processes (3)
- 470 Contemporary Marketing Concepts (3)
- 480 Computer Programming and Applications (3)
- 481 Statistical Analysis for Management Decisions (3)
- 482 Operations Research Methods (3)
- 490 Policy Formulation and Administration (3)
- Total – 33 hours

Required Second Level Courses Each degree candidate is required to take three, and encouraged to take all of the following five courses:

- 441 Concepts in Management Accounting (3)
- 451 Advanced Financial Management (3)
- 461 Organization Theory and Group Behavior (3)
- 471 Marketing Planning and Strategy (3)
- 483 Production and Operations Management (3)

Total – 9 hours

Electives The 18 elective hours are to be selected to allow for a modest degree of specialization. Up to nine hours beyond the required courses may be selected in one specialized area. No more than six hours of electives may be taken at the 300 level. With adviser approval, nine of the elective hours may be taken outside the School of Business Administration.

Total Electives – 18 hours

Total M.B.A. Program – 60 hours

A Typical M.B.A. Program

First Semester

- 410 Managerial Economic Analysis (3)
- 412 Public Policies Toward Business (3)

- 440 Financial Accounting: Theory and Practice (3)
- 460 Administrative Processes (3)
- 480 Computer Programming and Applications (3)
- Total – 15 hours

Second Semester

- 411 Analysis of National Economic Environment (3)
- 450 Financial Management (3)
- 470 Contemporary Marketing Concepts (3)
- 481 Statistical Analysis for Management Decisions (3)
- Elective (3)

Total – 15 hours

Third Semester

- 441 Concepts of Management Accounting (0–3)
- 451 Advanced Financial Management (0–3)
- 461 Organization Theory and Group Behavior (0–3)
- 471 Marketing Planning and Strategy (0–3)
- 482 Operations Research Methods (3)
- Electives (6–9)

Total – 15 hours

Fourth Semester

- 483 Production and Operations Management (0–3)
- 490 Policy Formulation and Administration (3)
- Electives (9–12)

Total – 15 hours

A Typical M.B.A. Program for the Student With Previous Education in Business The student with previous education in business is required to take 39 graduate hours, 30 of which must be at the University of Missouri-St. Louis, regardless of the number of required courses he waives.

At least one course (required or elective) must be taken in each of the following areas: accounting, finance, management, marketing and quantitative management science.

FIELDS of STUDY

After a transcript evaluation is completed, some students with an undergraduate background in business may be required to take both the first and second course in some areas, while other students may not even be required to take the second course. Therefore, the development of a typical course of study is tentative. If it is assumed that a student with an undergraduate background in business is able to waive the first course in each of the functional areas, his program of study will resemble the following:

First Semester

- 410 Managerial Economic Analysis or
- 411 Analysis of National Economic Environment (3)
- 412 Public Policies Toward Business (3)

- 441 Concepts in Management Accounting (3)
- 461 Organization Theory and Group Behavior (3)
- 482 Operations Research Methods (3)
- Total – 15 hours

Second Semester

- 451 Advanced Financial Management (3)
- 471 Marketing Planning and Strategy (3)
- 483 Production and Operations Management (0–3)
- Electives (6–9)
- Total – 15 hours

Third Semester

- 490 Policy Formulation and Administration (3)
- Electives (6)
- Total – 9 hours

representing the various areas. Students and faculty working in one area freely consult with members in other areas. In addition, there are a number of joint research projects currently under investigation involving faculty and students from two or more areas. The department currently has 17 full-time plus five part-time faculty.

Requirements for Admission Individuals who have completed the requirements leading to a bachelor's degree with a major in chemistry or an M.S. degree in chemistry may be admitted to the Graduate School as an *applicant* for the Ph.D. degree in chemistry. Those with

a bachelor's degree in a field other than chemistry may be admitted to the Graduate School to pursue graduate study in chemistry with the following restrictions:

1. The student will be required to make up deficiencies in background, usually by taking undergraduate course work.

2. No student shall be considered an *applicant* for the Ph.D. degree in chemistry until all undergraduate deficiencies have been removed.

The department has an admissions committee which makes recommendations to the chairman regarding each application for graduate study in chemistry. This committee will consider the applicant's overall GPA and will normally require above average performance in all areas of chemistry (general, analytical, organic, physical, and inorganic) as well as physics and mathematics, or other evidence of high aptitude for graduate work in chemistry. The committee will also consider each applicant's graduate record examination scores, letters of recommendation, undergraduate institution and academic program in reaching its decision.

Preliminary Advisement Each incoming graduate student will be given a comprehensive placement examination in chemistry and will be assigned to the departmental director of graduate studies who will devise a tentative plan of study in consultation with the student. The nature of the plan of study will be based upon the results of the placement examination and will be tailored to the needs and interests of the individual student. If the placement examination shows that it is necessary, the student will be required to repeat undergraduate course work for no credit. The student's courses for graduate credit will be chosen from 300 and 400 level courses in chemistry and from courses outside the

chemistry department which have been recommended by the department of chemistry.

Graduate Course Offerings (semester credit hours in parentheses)**Physical Chemistry Area**

- 333 Thermodynamics (3)
- 336 Quantum Chemistry I (3)
- 431 Advanced Chemical Calculations (3)
- 433 Statistical Mechanics (3)
- 434 Interaction of Electromagnetic Radiation & Matter (3)
- 436 Quantum Chemistry II (3)
- 439 Special Topics in Physical Chemistry (3)

Inorganic Chemistry Area

- 341 Inorganic Chemistry I (3)
- 342 Inorganic Chemistry II (3)
- 343 Techniques in Inorganic Chemistry (2)
- 441 Typical Element Chemistry (3)
- 442 Coordination Chemistry (3)
- 443 Physical Inorganic Chemistry (3)
- 449 Special Topics in Inorganic Chemistry (3)

Organic Chemistry Area

- 361 Advanced Organic Chemistry (3)
- 365 Advanced Organic Laboratory (arranged)
- 366 Physical Organic Chemistry (3)
- 463 Stereochemistry (3)
- 464 Organic Photochemistry (3)
- 465 Chemistry of Natural Products (3)
- 469 Special Topics in Organic Chemistry (3)

Interdisciplinary Courses & Courses in Other Areas

- 310 History of Chemistry (3)
- 324 Instrumental Analysis (3)
- 371 Biochemistry (3)
- 372 Advanced Biochemistry (3)
- 373 Biochemical Techniques (2)
- 374 Advanced Biochemistry Laboratory (2)
- 380 The Teaching of Chemistry in Colleges & Universities (1)

CHEMISTRY

Professors

Alan F. Berndt, M. Thomas Jones, Robert W. Murray

Associate Professors

Charles W. Armbruster, chairman, Lawrence Barton, Eugene R. Corey, David L. Garin, David W. Larsen, Rudolph E. K. Winter

Assistant Professors

Kenneth W. Barnett, Eric Block, James S. Chickos, Joyce Y. Corey, Harold H. Harris, Jane A. Miller, Robert E. Penn, Robert A. Rouse

The Department of Chemistry at the University of Missouri-St. Louis offers a course of study for graduate students wishing to earn the Ph.D. degree. In addition to a balanced program of basic graduate courses, the department offers special topics, courses and seminars in current research areas. In a number of areas of current interest, research is being carried on by post-doctoral students, members of the faculty, graduate and undergraduate students.

The department is of average size among chemistry departments in the country. There is strong interaction among members of the faculty

FIELDS of STUDY

- 414 Molecular Spectroscopy (3)
- 415 Organometallic Chemistry (3)
- 416 Chemical Applications of Group Theory (3)
- 417 Environmental Chemistry (3)
- 489 Chemistry Colloquium (0)
- 490 Graduate Research in Chemistry (arranged)

Selection of a Research Adviser The student who is an *applicant* for the Ph.D. will normally choose a research adviser during the second semester of the first year of graduate study. At this time, the advisory role of the director of graduate studies will be assumed by the research adviser. The research adviser will consult with the student concerning all the remaining requirements for completion of the program. Primary effort will be directed toward the formulation of a research problem, its satisfactory completion, and the presentation of an acceptable dissertation.

The selection of a research adviser and the subsequent initiation of a research project are important and crucial steps in a graduate student's career. It is important that the graduate student make the most informed choice. Therefore, the following procedure for the selection of a research adviser has been adopted.

When a student desires to make a formal selection of his research adviser he will so inform the director of graduate studies, who will supply him with a list of all faculty members in the area of specialization (or areas of specialization, if the student is undecided) in which the student wishes to prepare his dissertation. It will be the responsibility of the student to visit each of the faculty members so listed and to explain that he is in the process of selecting a research adviser. It will be the responsibility of each faculty member visited to make an early appointment with the student for the purpose of

discussing the various research projects available to the student. After their discussion the faculty member will sign the student's list indicating that he has talked with the student. After the student has obtained all the required signatures, he will return his completed list and his selection in writing of a research adviser to the director of graduate studies. The director of graduate studies will determine in writing that the faculty member so selected is willing to accept the student as an advisee. If the faculty member is willing to accept the student and the departmental chairman concurs then the director of graduate studies will obtain the approval of the graduate dean. The faculty list, the student's selection of his research adviser, and the adviser's acceptance of the student will all become part of the student's permanent file.

Examinations After a student has become an *applicant* for the Ph.D. degree he will be required to take a series of cumulative examinations which will be given eight times a year. The student must pass three cumulative examinations by the end of his second year as an *applicant* for the Ph.D. degree and will be required to pass a total of eight cumulative examinations of which at least six must be in his area of specialization, i.e., organic, inorganic, or physical. The student is encouraged to begin the cumulative examinations in his first year of graduate study, but must start no later than the beginning of his second year as an *applicant* for the Ph.D. degree. The cumulative examinations normally will be held on the second Saturday of each month October through May.

The mechanism for designing and deciding on passing and failing grades for each cumulative examination will reside with the faculty members in each area of specialization. It will be their

responsibility to select one of their members to coordinate the cumulative examination procedure in their area of specialization (i.e., preparation of the examination, administration of the examination, scoring, evaluation of the score, and reporting). This individual will report, to the director of graduate studies, the names of all students taking a given cumulative examination, the date the examination was taken, and whether the student passed or failed.

Advancement to Pre-candidacy An *applicant* for the Ph.D. degree may be advanced to pre-candidate status when the following requirements have been satisfied:

1. Completion of 20 hours of graduate work including research hours (i.e., work at the 300 and 400 level).
2. Passing three cumulative examinations.
3. The *applicant* must be in good academic standing
4. Selection of a research adviser.

When the above requirements are met it will be the responsibility of the *applicant* to inform his adviser. The *applicant's* adviser and the chairman of the department shall then recommend to the graduate dean that the *applicant* be advanced to *pre-candidate* status. At the same time the student, with the approval of his adviser and the chairman of the department, will file a detailed program, except for the dissertation topic with the dean of the Graduate School. After approval, copies will be sent to the student, his adviser and the chairman of the department.

After the dean of the Graduate School has approved the student's *pre-candidate* status, the student's adviser and the chairman of the department will appoint a three member departmental dissertation committee. This committee will normally consist of graduate faculty members drawn from the Department of Chemistry.

The chairman of this committee must be a member of the faculty of the Department of Chemistry and normally will be the student's research adviser.

It is the charge of this committee to provide guidance to the student in the preparation of his dissertation and its ultimate presentation to the Graduate School dissertation committee.

Advancement to Candidacy A student may be advanced to *candidacy* for the Ph.D. degree when the following requirements are met:

1. The student's course and research credit hours must fulfill the requirements of the Graduate School. At the time the student is advanced to *candidacy* he must have completed (or be reasonably expected to have completed by the end of that semester) 60 credit hours of which 21 hours normally will be non-dissertation course work. The 21 hours will not include Chemistry 489 and normally will not be all in his field of specialization.

2. The student must have passed eight cumulative examinations.

3. The student must have satisfactorily demonstrated scientific proficiency in one of the following foreign languages: French, German, or Russian. The student may satisfy the foreign language requirement of the department in one of the following ways:

A. Satisfactory completion (C or better) of Scientific Language 100 or its equivalent in one of the languages required.

B. Receipt of a score which is acceptable to the department on the Graduate Record Examination in one of the languages required.

4. The student normally must have presented at least one seminar to the department on his dissertation research.

5. The student will have participated in the undergraduate academic program as a laboratory assistant for at least one semester.

FIELDS of STUDY

6. The student must be in good academic standing.

When the above requirements are met, it will be the responsibility of the student to inform the chairman of his departmental dissertation committee. If the chairman of the departmental dissertation committee and the chairman of the department agree, then such a recommendation shall be made to the graduate dean.

After the graduate dean has approved the student's *candidacy* status, the student in consultation with the chairman of his departmental dissertation committee will select, for recommendation to the

graduate dean, the members of his Graduate School dissertation committee. This committee must consist of at least three members of the graduate faculty, with one of the members from outside the Department of Chemistry.

Two copies of the dissertation, certified as complete and provisionally acceptable by all the members of the Graduate School dissertation committee, will be submitted to the graduate office at least six weeks prior to commencement. The dean of the Graduate School, at his discretion, may assign the dissertation to other readers on or off the campus, or seek such other advice as he feels pertinent.

ECONOMICS

Professors

Robert Loring Allen, Joseph P. McKenna, Hugh O. Nourse, chairman

Associate Professors

Elizabeth Clayton, William E. Mitchell, Donald A. Murry, Herbert D. Werner

Assistant Professors

John F. Hanieski, Merphil S. Kondo, Emilio Pagoulatos, Donald Phares, Robert Sorenson, James F. Veatch

The master of arts degree program in economics is designed to prepare candidates for positions as professional economists. It is intended to help fill the need for economists in: (1) Economic research and operational areas of banks and other financial institutions, businesses, international organizations, and federal, state and local government agencies; (2) Teaching of economics at the junior college level; (3) Administrative positions in sales, production control, urban planning and international government operations. In addition, the degree provides a firm foundation for subsequent graduate work leading to the doctorate in economics, business and public administration, and in related fields, as well as advanced degree work in public planning.

Program Requirements Each candidate

for the M.A. degree in economics must complete at least 36 hours of graduate work in the field of economics or in appropriate outside electives. The number of required hours may be reduced to 30 hours if the candidate has completed 6 hours of intermediate economic theory (the equivalent of Economics 250 and 251). Otherwise, all students are required to complete successfully the following courses:

Business 410	Managerial Economic Analysis
Business 411	Analysis of National Economic Environment
Economics 401	Macroeconomic Analysis
Economics 402	Microeconomic Analysis
Economics 403	Research Methods

Economics 365 Economic Statistics and Econometrics

In addition the student must complete satisfactorily two of the following seminars:

Economics 420 Topics in Economic Structure, Policy, and Planning

Economics 430 Topics in International Economics

Economics 470 Topics in Urban Economics

At the option of the department, the candidate may write a thesis.

In order to enter the program, the student must have completed a course in elementary statistics (the equivalent of Business 31-Elementary Statistics) and calculus (the equivalent of Mathematics 101-Survey Calculus). Students who have not satisfied these prerequisites must take remedial undergraduate work in accordance with the nature of the deficiency.

In addition to the basic theory and quantitative requirements and the seminars the student must take four elective courses at the 300 or 400-level. This allows the student to develop a field of concentration in consultation with the graduate adviser. In each case, the program is developed in consultation with the graduate adviser.

An adequately prepared full-time student can complete all of the degree requirements in one calendar year. Since courses carrying graduate credit are offered in the evening, students who are employed on a full-time basis and are adequately prepared can complete the program requirements in two calendar years. The candidate is assigned a faculty committee which works with him to tailor his program of study to his career needs.

Each candidate for the M.A. degree in economics is required to pass a

comprehensive examination at the end of his course of study. This examination may be written or oral, or both. A student who fails the examination will be allowed to repeat the examination at the end of six months. A student will not be allowed to take the examination more than twice.

Financial Assistance The Department of Economics has available a number of teaching assistantships involving five hours of teaching laboratory sections in the Principles of Economics course under the guidance of a senior staff member. In addition, it is expected that a number of research assistantships will become available. Write to the departmental chairman for further information.

Admission Individuals desiring admission to the M.A. program in economics should follow the procedure outlined on page 31 of this catalog.

EDUCATION

Description The School of Education is organized into three departments: the Department of Administration, Philosophy, and Secondary Education; the Department of Behavioral Studies and Research; and the Department of Elementary Education. Programs leading to the master of education degree are available in elementary education, secondary education, elementary and secondary school administration, and elementary and secondary school counseling. Within these programs, graduate courses are offered which allow for limited concentrations in reading, special education and some academic disciplines. **Purpose** The graduate programs in education are designed to enhance the theoretical and applied competencies of school personnel and their ability to

relate these through the artistic and scientific dimensions of the field. Although each program may have specific goals which vary in accordance with the professional role involved, there is a common concern for the objectives of graduate professional study. Among these a major objective is the contribution toward the individual's commitment to seek and attain the social good through his specialized abilities.

Requirements of Admission Applicants for the master of education degree follow the same procedures for admission and are subject to the minimal requirements as stated for all graduate students.

Advisement Before preparing a course of study each semester the student shall consult with his adviser. When he

has completed no more than one-half the number of hours required for his degree, he will prepare, together with his adviser, the form, *Program for Master's Degree*. If the program is approved, it becomes the official degree program plan for the student.

Degree Requirements Academic standards, credit hour requirements, residency, statute of limitations and thesis options are the same as for all graduate students.

Comprehensive Examinations Written comprehensive examinations are ordinarily administered during the final semester of course work. The required comprehensive examination may be waived for students having a grade point average of 3.5 or higher or for those who write a thesis.

DEPARTMENT OF ADMINISTRATION, PHILOSOPHY AND SECONDARY EDUCATION

Professors

Ward Barnes, visiting professor, H. E. Mueller, Harold Turner, Henry Weinstock, Joy Whitener

Associate Professors

Walter Ehrlich, Robert Gard, chairman, Angelo Puricelli, assistant dean education and extension, John Rigden, Charles Smith, Blanche Touhill, Paul Travers, Clive Veri, Jane Williamson

Assistant Professors

Dennis Fallon, Charles Fazzaro, Charles Granger, Jane Miller, Jerry Pulley, Robert Starr, Margaret Sullivan, Samuel Wood

The department offers three programs leading to the master of education degree: (1) elementary school administration; (2) secondary school administration; and (3) secondary education.

Students entering any of the department's programs and continuing in them are expected to meet all requirements of the Graduate School and the School of Education. Graduate

students who have not met secondary certification requirements may elect a combined master's in education and certification program.

Elementary and Secondary School Administration

At the present time there are two administration degree programs available. These two programs lead to a master's degree in administration with a specialization in either elementary

or secondary school administration. However, the basic Missouri certification requirements for elementary or secondary principals in AAA schools are the same as the requirements for the certification of superintendents. These requirements are:

1. Life Missouri elementary or secondary teacher's certificate based on the baccalaureate degree

2. A two-year graduate program (i.e. 60 credit hours) approved by NCATE and including the master's degree.

These advanced certification studies in education administration are looked upon as a natural extension of the master's degree programs in elementary and in secondary administration.

Studies for certification in elementary or secondary school administration or the superintendency will be individually planned with a graduate adviser in education administration. All requirements of accrediting agencies, the Graduate School, the School of Education, and the department must be met.

Master of Education Degree in Administration

The master of education degree may be earned upon the completion of a minimum of thirty-two hours of a student's *planned* program. The student must submit his planned program before completing twelve (12) of the required thirty-two (32) hours required for a master's degree.

RECOMMENDED CURRICULUM

Elementary and Secondary Administration: Advanced Certification Studies: Recommended Curriculum

I. COMMON CORE STUDIES	Semester Hours	
	Elem. Admin.	Sec. Admin.
A. Philosophical Foundations		
B471 Philosophy of Education	3	3
B. Psychological Foundations		
A405 Psychology of Education	3	3
A407 Psychology of the Elementary School Child	3	
A408 Psychology of Adolescence		3
C. Research Foundations		
G427 Educational Statistics	3	3
*G431 Classroom Measurement & Evaluation II	3	3
D. Administrative Foundations		
C414 Foundations of Educational Administration	3	3
C408 Elementary School Administration	3	
C406 Secondary School Administration		3
E404 Elementary School Supervision	3	
D415 Secondary School Supervision		3
E406 Curriculum Construction in Elementary Schools	3	
D445 Secondary School Curriculum		3
Total I	27	27

FIELDS of STUDY

II. TECHNICAL & HUMAN ASPECTS OF EDUCATIONAL ADMINISTRATION

	Semester Hours	
	Elem. Admin.	Sec. Admin.
A. Technical Aspects		
C418 Legal Aspects of Educational Administration	3	3
C441 Principles of Public School Finance in Missouri	3	
D440 Improvement of Secondary School Teaching		3
D446 Curriculum Construction for Secondary Schools		3
E425 or E450 or E451 or E452 or E453 Problems & Research in.	3	
(The student will select one additional course in the "Technical Aspects" area)	3	3
B. Human Aspects		
C420 Administration of Professional Personnel	3	3
(The student will select one additional course in the "Human Aspects" area)	3	3
Total II	18	18

*May be waived if the candidate has demonstrated competence in this area.

III. MINOR AREA OF CONCENTRATION

A student will be expected to demonstrate competence in at least one field other than educational administration. Other fields may include the following: (1) Sociology, (2) Political Science, (3) Business Administration [Industrial-Labor Relations or other fields], (4) Economics, (5) History, (6) Educational Research.

Competence may be demonstrated by successful completion of a minimum of 6 graduate hours in one of the elected fields. Sufficient flexibility is to be allowed in the minor area of concentration to enable the adviser and student to make alternate selections of the area of concentration should it be deemed advisable.

	6	6
Total III	6	6

IV. INTERNSHIP OR FIELD STUDY

Any candidate for the Advanced Certification Studies who lacks appropriate administrative experience will be strongly urged to participate in an administrative internship program.

A Field Study will be required for those candidates who have had sufficient administrative experience and for those unable to secure permission from their school district for active administrative involvement.

	3	3
Total IV	3	3

EDUCATION

V. ELECTIVES**

Graduate courses from the School of Education or other cognate fields may be selected by the candidate and his adviser provided they have been approved by the Graduate School.

	6	6
Total V	6	6
Total Required Credit Hours	60	60

**Recommended Electives. The following are a list of recommended electives that will *strongly* support a student's planned program in school administration: B472, B475, C400, C401, C410, C411, C416, C419, C420, C422, C452, D430, G401.

Public School Superintendent: Advanced Certification Studies: Recommended Curriculum (Tentative program subject to NCATE approval)

I. COMMON CORE STUDIES	C ¹	F ²	P ³	G ⁴
A. Philosophical Foundations				
B471 Philosophy of Education	3	3	3	3
B. Psychological Foundations				
A405 Psychology of Education	3	3	3	3
A407 Psychology of the Elementary School Child or A408 Psychology of Adolescence	3	3	3	3
C. Research Foundations				
G427 Educational Statistics	3	3	3	3
*G431 Classroom Measurement & Evaluation II	3	3	3	3
D. Administrative Foundations				
C414 Foundations of Educational Administration	3	3	3	3
C408 Elementary Administration	3	3	3	3
C406 Secondary Administration	3	3	3	3
E404 Elementary Supervision or D415 Secondary Supervision	3	3	3	3
E406 Elementary Curriculum and/or D445 Secondary Curriculum	6	3	3	3
Total I	33	30	30	30

II. TECHNICAL & HUMAN ASPECTS OF EDUCATIONAL ADMINISTRATION

A. Technical Aspects

C416 School Buildings & Sites	3	3	0	3
C418 Legal Aspects of Educational Administration	3	3	3	3
C419 State & Federal Financing of Education	0	3	0	0
C441 Principles of Public School Financing in Missouri	3	3	3	3
D440 Improvement of Secondary School Teaching	3	0	0	0

FIELDS of STUDY

B. Human Aspects

C420 Administration of Professional Personnel	3	3	3	3
C422 Leadership in Educational Administration	0	0	3	3
C452 School Public Relations	3	3	3	3
C395 Principles & Procedures of Student Personnel	0	0	3	0
Total II	18	18	18	18

*May be waived if the candidate has demonstrated competence in this area.

1. C - Curriculum 3. P - Personnel
2. F - Finance 4. G - General

III. MINOR AREA OF CONCENTRATION

C F P G

A student will be expected to demonstrate competence in at least one field other than educational administration. Other fields may include the following: (1) Sociology, (2) Political Science, (3) Business Administration (Industrial-Labor Relations or other fields), (4) Economics, (5) History, (6) Educational Research.

Competence may be demonstrated by successful completion of a minimum of 6 graduate hours in one of the elected fields. Sufficient flexibility is to be allowed in the minor area of concentration to enable the adviser and student to make alternate selections of the area of concentration should it be deemed advisable.

	6 ⁵	6 ⁶	6 ⁷	6 ⁸
Total III	6	6	6	6

IV. INTERNSHIP OR FIELD STUDY

Any candidate for the Advanced Certification Studies who lacks appropriate administrative experience will be strongly urged to participate in an administrative internship program.

A Field Study will be required for those candidates who have had sufficient administrative experience and for those unable to secure permission from their school district for active administrative involvement.

	3	3	3	3
Total IV	3	3	3	3

V. ELECTIVES**

Graduate courses from the School of Education or other cognate fields may be selected by the candidate and his adviser provided they have been approved by the Graduate School.

	0	3	3	3
TOTAL V	0	3	3	3

Total Required Credit Hours	60	60	60	60
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- Should be in the area of Education Research and/or Curriculum.
- Should be in the area of Business and/or Education.
- Should be in the area of Industrial-Labor Relations and/or Management.
- Should be approved by student's adviser.

Recommended Electives. The following area list of recommended electives that will **strongly support a student's planned program in school administration: B472, B475, C400, C401, C410, C411, C416, C419, C420, C422, C452, D430, G401.

Secondary Education

The master of education degree program with specialization in secondary education is flexibly designed to allow for the specific interests of teachers, department chairmen, curriculum workers and instructional supervisors. Thus, to meet the required minimum of 32 hours of credit, candidates' programs may be planned within a range from eight hours in the teaching field and 24 hours in professional courses, to 23 hours in the teaching field and nine hours in professional courses. All such programs must be planned with a graduate adviser and are subject to approval in the department, School of Education and Graduate School. Required and recommended courses for the degree include the following:

- Professional Foundations (Required)**
A405 Psychology of Education (3)
B471 Philosophy of Education (3)
- Teaching Field (eight hours required)**
Courses approved by the Graduate School for M.Ed. programs in the candidate's teaching field are to be selected in consultation with an adviser from the teaching field.
- Secondary Education (three hours or more required)**
D440 Improvement of Secondary School Teaching (3)
D445 The Secondary School Curriculum (3)

- D446 Curriculum Construction for Secondary Schools (3)
- G431 Classroom Measurement and Evaluation II (3)
- 427 Educational Statistics (3)

IV. Electives

Additional courses may be drawn from offerings in the School of Education and/or the teaching field to provide a consistent program.

Secondary Education With Specialization in Reading

The master of education degree program with secondary reading as the field of specialization is designed to enable the candidate to further his competencies as a teacher of reading and prepare for a role as a reading specialist, consultant in reading, and/or for further graduate study. The required and recommended courses for this degree are as follows:

- Professional Foundations (Required)**
A405 Psychology of Education (3)
B471 Philosophy of Education (3)
- Secondary Education (one or more recommended)**
D440 Improvement of Secondary School Teaching (3)
D445 The Secondary School Curriculum (3)
D446 Curriculum Construction for Secondary Schools (3)
G431 Classroom Measurement and Evaluation II (3)
G427 Educational Statistics (3)

FIELDS of STUDY

**III. Courses in Reading (Required)
(Must be taken in the following
sequence)**

- *365 Problems of Teaching
Reading in the Secondary
Schools (3)
- *369 Analysis and Correction of
Reading Disabilities (3)
- *E479 Clinical Problems in Child
Study I (3)
- *E489 Clinical Problems in Child
Study II (3)
- *D410 Seminar in Secondary
Education (Reading) (3)

IV. Courses in Teaching Field

Courses approved for the master of education program in the candidate's teaching field are to be selected in consultation with an adviser from the teaching field.

V. Supporting Courses (Elective)

- G433 Individual Intelligence
Testing (Ed 431 must
precede) (3)
- A408 Psychology of
Adolescence (3)
- D430 The Junior High School (3)
- G401 Principles and Practices
of Student Personnel
Work (3)
- G406 Mental Hygiene (3)
- 325 Teaching Reading in the
Elementary School (3)
- Total – Minimum of 32
semester hours

**Required for certification in reading by
Missouri Teacher Certification regulations.*

Secondary Education and Certification

The M.Ed. in secondary education requires a minimum of 32 hours of graduate credit. If certification is obtained with undergraduate courses alone, an additional 21 hours of professional preparation is required. Thus, a minimum of 53 hours would be required (assuming that teaching field credits are adequate to meet state requirements). Under the combined program, a total of nine graduate hours may be applied to both certification and the M.Ed., reducing the necessary total to 44 hours.

**I. Professional Requirements (no
graduate credit)**

- Educ. 163 Techniques of
Secondary School
Teaching (3)
- Educ. 2--- Curriculum &
Methods of Teaching
(subject speciality)
(3)
- Educ. 271 Student Teaching (6)

II. Certification and M.Ed. (Required)

- B471 Philosophy of
Education (3)
- A405 Psychology of Education
(3) or
- 302 Psychology of Teaching
and Learning (3)
- A408 Psychology of
Adolescence (3)

III. Master's in Education

Other graduate courses (including eight
hours in teaching field) (23)

Total – 44 hours minimum

Assistant Professors

Barbara Fulton, Rickey L. George, Alice E. Klein, Joseph Kuzniar, Robert Packard, Robert Tolsma

The Department of Behavioral Studies and Research offers work leading to the M.Ed. degree and the requisite courses for state certification in elementary and secondary guidance and counseling.

Programs also are available for those who are interested in junior college counseling, employment counseling, psychological examination evaluation and research and education psychology.

It is important for the student to recognize that course work and requirements for the M.Ed. degree and Missouri State Guidance Requirements are independent constructs. Each student's graduate program will be designed to meet both certification and degree requirements through the individual process of faculty advisement. However, it is important to note that courses listed below (for both elementary and secondary) are all required for Missouri State Guidance Certification, but that any 32 semester hours of work in consultation with the adviser can be sufficient for the M.Ed. degree.

Secondary School Counselors

The graduate program for Secondary School Counselors is a rather specific program designed to enable the student to receive a master of education degree from the University of Missouri-St. Louis and to meet the certification requirements of the State Department of Education for Secondary School Counselors

I. Professional Foundations (Required)

- A405 Psychology of
Education (3)
- G427 Educational Statistics (3)

II. Area of Specialization (Required)

- G433 Individual Intelligence
Testing (3)
- G432 Educational and
Psychological

Measurement (3)

G401 Principles and Procedures
of Student Personnel
Work (3)

G408 Occupational and
Education Information
(3) or

G409 Vocational Choice Theory
and Applications (3)

G404 Individual Inventory (3)

G406 Mental Hygiene (3)

G407 Counseling Methods (3)

G415 Guidance Practicum (3)

Elementary School Counselors

The following specific requirements apply to the program for Elementary School Counselors.

G433 Individual Intelligence
Testing (3)

313 The Psychology of
Exceptional Children (3)

A405 The Psychology of
Education (3)

A407 Psychology of the
Elementary School
Child (3)

G427 Educational Statistics (3)

369 Analysis and Correction of
Reading Disabilities (3)

G432 Educational and
Psychological
Measurement (3)

G401 Principles and Procedures
of Student Personnel
Work (3)

G404 Individual Inventory (3)

G406 Mental Hygiene (3)

G407 Counseling Methods (3)

G415 Guidance Practicum I (3)

G416 Guidance Practicum II (3)

*G412 Group Procedures in
Counseling (3)

**Recommended, but not required.*

**DEPARTMENT OF BEHAVIORAL
STUDIES AND RESEARCH**

Professors

William L. Franzen, dean, Thomas E. Jordan, George E. Mowrer, Harold W. Richey, Arthur E. Smith, associate dean, Gaylen Wallace, chairman, King Wientge

Associate Professors

Margaret C. Fagin, Jon C. Marshall, Ray Rhine

DEPARTMENT OF ELEMENTARY EDUCATION

Professors

Richard W. Burnett, Hans C. Olsen, assistant dean, Wallace Z. Ramsey, chairman, Huber M. Walsh

Associate Professors

Walter J. Cegelka, Robert E. Rea, Elizabeth P. Watson

Assistant Professors

Donald R. Greer, Dick Miller, John L. Morris, Leo V. Rodenborn, Thomas Schnell
Doris A. Trojcek, George Yard

Presently four programs are offered, all of which lead to the master of education degree in elementary education. These are: a) master of education in elementary education — a program designed to further competencies in elementary curriculum and instruction; b) master of education in elementary education with specialization in reading — a program for persons wishing an area of concentration in reading; c) master of education in elementary education with specialization in special education — program for persons wishing an area of concentration in mental retardation; and d) master of education in elementary education and certification program — a joint teacher certification and master's degree program. For more information on these, see section on "Programs of Study" below.

Students in the elementary education with specialization in reading program take a three hour examination in reading. For students in either of the other two programs (see above), two one and one-half hour examinations are required in two separate fields. The two fields of examination are determined jointly by the candidate and his adviser at the time the student files his examination application. It is the responsibility of the student to insure that this application form, showing the field or fields of examination and bearing the adviser's signature, is filed with the School of Education Graduate Office by the announced deadline.

Programs of Study Course work in the elementary and reading specialization is organized into three phases. The first phase consists of courses providing advanced studies in the philosophical, psychological and curricular foundations of education. Phase two is comprised of advanced courses in elementary education and/or reading. Phase three consists of elective courses selected jointly by the student and his adviser, which are presented as cognate or supporting courses.

The combined master's in education and certification program consists of: a) professional education courses; b) the philosophical and core requirements and reading; and c) other graduate course work.

Master of Education — Elementary Education

The master of education degree program with elementary education as the field of specialization is designed to enable the candidate to further his competencies as an elementary school teacher. Sufficient flexibility is incorporated into the program to provide for the individual's professional needs, interests and aspirations. The required and recommended courses for this degree are as follows:

I. Core Requirements

As a minimum core requirement, graduate students in elementary education shall complete at least one graduate-level course in each of the following areas:

Learning Psychology (i.e. Educational Psychology, Psychology of the Elementary Child, Psychology of the Exceptional Child, *et.al.*) (3)

Research-Statistics-Measurements (i.e. Classroom Measurement, Educational and Psychological Measurements, Educational Statistics, Research Design, *et.al.*) (2)

Elementary Curriculum (i.e. Curriculum Construction in Elementary Schools, Elementary School Curriculum, *et.al.*) (3)

Recommended Elementary Education Courses

*325 Teaching Reading in the Elementary School (3)

*E367 Problems of Teaching Arithmetic in the Elementary School (3)

E445 Problems of Teaching the Language Arts (3)

*E368 Problems of Teaching Social Studies in the Elementary School (3)

E410 Seminar in Elementary Education (2)

**These courses are highly desirable as part of the program if the candidate has not recently had strong courses in these areas.*

II. Cognate Fields (Electives)

Other courses may be selected from cognate fields providing they have been approved by the Graduate School for M.Ed. degree programs.
B471 Philosophy of Education is recommended.

Total — Minimum of 32 semester hours.

Master of Education — Elementary with Specialization in Reading

The master of education degree program with reading as the field of specialization is designed to enable the candidate to further his competencies as a teacher of reading and prepare for a role as remedial reading specialist, consultant

in reading and/or for further graduate study.

I. Core Requirements

As a minimum core requirement, graduate students in elementary education shall complete at least one graduate-level course in each of the following areas:

Learning Psychology (i.e., Educational Psychology, Psychology of the Elementary Child, Psychology of the Exceptional Child, *et.al.*) (3)

Research-Statistics-Measurements (i.e., Classroom Measurements, Educational and Psychological Measurements, Educational Statistics, Research Design, *et.al.*) (3)

Elementary Curriculum (i.e., Curriculum Construction in Elementary Schools, Elementary School Curriculum, *et.al.*) (3)

Courses in Reading (Required)
(Must be taken in the following sequence. Each is prerequisite to the next.)

*325 Teaching Reading in the Elementary School (3)

E469 Clinical Diagnosis and Treatment of Reading Disabilities

G433 Individual Intelligence Testing (G431 must precede) (3)

*E479 Clinical Problems in Child Study I (3)

*E489 Clinical Problems in Child Study II (3)

The student, with the adviser's permission, may substitute other courses for any requirement if the student has had a recent upper-class undergraduate course covering the same material

II. Supporting Courses (Electives)

English

220 Growth and Structure of the English Language (3)

221 Introduction to Modern Linguistics (3)

Education

- E425 Problems and Research of Teaching Elementary School Reading (3)
- E445 Problems in Teaching the Language Arts (3)
- 369 Analysis and Correction of Reading Problems (3)
- A432 Psychology of Exceptional Children (3)
- E330 Problems in Mental Retardation (3)
- 431 Classroom Measurement and Evaluation II (3)
- G406 Mental Hygiene (3)
- 365 Problems of Teaching Reading in the Secondary Schools (3)
- B471 Philosophy of Education (3)
- 340 Selection and Utilization of Educational Media (3)
- E466 Children's Literature I (and E467 Children's Literature II) (3)

III. Cognate Fields

Other courses may be selected from cognate fields after conferring with an adviser in reading. Such courses have been approved for M.Ed. degree programs. B471 Philosophy of Education is recommended.

Total — Minimum of 32 semester hours
*Required for certification in reading by Missouri Teacher Certification Regulations.

Elementary Education with Specialization in Special Education (Mental Retardation)

The master of education degree program with mental retardation as the field of specialization is designed to enable the candidate to further his competencies as a teacher of the mentally retarded and prepare for a role as consultant in mental retardation and/or for further graduate study.

I. Core Requirements

As a minimum core requirement, graduate students in elementary education shall complete at least one graduate-level course in each of the following areas:

Learning-Psychology (i.e., Educational Psychology, Psychology of the Elementary Child, Psychology of the Exceptional Child, *et.al.*) (3)

Research-Statistics-Measurements (i.e., Classroom Measurements, Educational and Psychological Measurements, Educational Statistics, Research Design, *et.al.*) (3)

Elementary Curriculum (i.e., Curriculum Construction in Elementary Schools, Elementary School Curriculum, *et.al.*) (3)

II. Courses in Special Education (Required)

- *313 Psychology of Exceptional Children (3)
- *A433 Education of the Mentally Retarded (3)
- *369 Analysis and Correction of Reading Problems (3)

Students seeking state certification in mental retardation must complete six hours of supervised student teaching or practicum with mentally retarded children.

*Required for certification in mental retardation by Missouri Teacher Certification Regulations.

III. Supporting Courses (Electives)

- G433 Individual Intelligence Testing (Ed 431 must precede) (3)
- D376 Instructional Television and Other Audio-Visual Media (3)
- G431 Classroom Measurement and Evaluation II
- G406 Mental Hygiene (3)
- 365 Teaching Reading in the Secondary School (3)
- E479 Clinical Problems in Child Study I (3)

E489 Clinical Problems in Child Study II (3)

IV. Cognate Fields

Other courses may be selected from cognate fields after conferring with an adviser in the area. Such courses have been approved for M.Ed. degree programs. B471 Philosophy of Education is recommended.

Total — Minimum of 32 semester hours

Combined Master's in Elementary Education and Certification Program

I. Professional Education

Requirements

Certification (Required) — no graduate credit for 100 and 200-level courses.

- Educ. 110 Elements of Health Education (3)
- Educ. 137 Elementary School Music (3)
- Educ. 139 Art Activities for Elementary Schools (3)
- Educ. 140 Elementary School Organization and Administration (3)
- Educ. 150 Children's Literature (3)
- Educ. 153 Problems of Teaching Mathematics in

Elementary Schools (3)

Educ. 155 Physical Education Activities in Elementary Schools (3)

Educ. 157 Regions and Nations of the World (3)

Educ. 251 Elementary School Student Teaching (6)

Certification and Master's in Education (Required)

- Educ. 325 Teaching Reading in Elementary Schools (3)
- Educ. B471 Philosophy of Education (3)
- Educ. 302 Psychology of Teaching and Learning (3) or
- A405 Psychology of Education (3)
- A407 Psychology of Elementary School Child (3)

II. Master's in Education

Other graduate courses (20)

Total — 62 hours

Note: This program does not include any courses which may be required to remove academic deficiencies.

HISTORY

Professors

James D. Norris, J. Neal Primm, Everett Walters

Associate Professors

R. Gene Burns, Walter Ehrlich, Susan Hartmann, William Maltby, Howard Miller, Richard Mitchell, George F. Putnam, Richard Resh, Arthur H. Shaffer, Blanche M. Touhill

Assistant Professors

Mark Burkholder, Jerry Cooper, P. Corby Finney, Louis Gerteis, Steven Hause, Winston Hsieh, Charles Korr, Ann Lever, Anthony O'Donnell, Edward Paynter, James Roark, Steven Rowan, Margaret Sullivan, Martin Towey.

Candidates for the master of arts degree in history are required to take 30 hours of graduate work at the 400-level,

except that the student may elect as many as nine of his 30 hours in history or in a related discipline at the 300-level.

FIELDS of STUDY

The candidate will elect five or more (15 hours minimum) graduate readings courses (400-level), at least one of which will be outside his general area. The general areas are European History (including British), U.S. History and Asian History.

The M.A. candidate will spend two semesters (six hours) in two 400-level seminars, in which a thorough grounding in historical research will be the objective. The student will write a research paper in each seminar. One of the two seminars should be taken outside the student's general area.

Prior to the oral examination, the candidate must demonstrate competence in a foreign language or in quantitative methods as applied to history.

The candidate will take an oral examination during his last semester of work, covering three fields selected by the student in consultation with his committee. The candidate's committee shall consist of his major professor as chairman, and two other professors, one of whom must be outside the general area of specialization.

POLITICAL SCIENCE

Professors

Edwin H. Fedder, Werner F. Grunbaum, Norton E. Long, Eugene J. Meehan, Robert S. Sullivan

Associate Professors

Bryan T. Downes, Kenneth F. Johnson, E. Terrence Jones, chairman, Harrell R. Rodgers, Lyman T. Sargent

Assistant Professors

John N. Collins, Hampton T. Davey, Richard E. Hayes, Ruth S. Jones, Thomas J. Pavlak, Frederic S. Pearson

The Department of Political Science offers a program of graduate studies leading to the degree of master of arts in political science. The graduate program is broad and flexible, offering intermediate training for students expecting to continue in a doctoral

At the conclusion of the examination, the committee will decide by majority vote whether the student shall pass, fail, or fail with an option to retake the examination at a later date. If the student is given the option of taking a second examination, the student will decide whether he wishes to take it in oral or written form. The second examination will be regarded as final. The second examination must be held no less than one and no more than two semesters from the date of the first attempt. Summer session may be counted as a semester, but the student should be aware of difficulties involved in gathering a committee during the summer.

The history department has a number of teaching assistantships and research assistantships which are awarded each year to those graduate students in the department who apply and who best meet the qualifications for these assistantships. The annual stipend varies from \$3,300 to \$3,700. Write to the departmental chairman for additional details.

program, terminal training for students preparing to teach in secondary schools or community colleges, and training for careers in government, business, community and non-profit agencies.

Principal areas of concentration are Urban and Regional Politics, American

Politics, Political Process and Behavior, International Politics, Comparative Politics and Public Administration.

Research in political science is assisted by UMSL's Center of Community and Metropolitan Studies, Center for International Studies and Computer Center. The department is a member of the Inter-University Consortium for Political Research, thereby providing graduate students access to a wide range of survey data in American, European and international politics. A Political Science Laboratory with unit record equipment, electronic calculators and data storage facilities, is available for graduate training and research.

A limited number of teaching assistantships are available, offering a stipend which varies from \$3,300 to \$3,700.

In addition to the general requirements of the Graduate School, the minimum requirements for the M.A. degree in political science are:

1. Twenty-four (24) hours of course work, of which:
 - a. 18 hours must be in courses at or above the 400-level.
 - b. 12 hours must be in core courses,

including Political Science 400 and 450. (In addition to 400 and 450, the core courses include Political Science 401, 430, 442, 460, 470 and 480.)

2. Eight (8) semester hours of thesis or internship, or nine (9) semester hours of additional course work.
3. A written and/or oral examination. A student who fails the examination will be allowed to repeat it once only, within a six month's period. The examination committee will decide if the second examination will be written or oral.

In addition to the above list of requirements, the Department of Political Science strongly recommends that all M.A. candidates take statistics if they have not already done so. Ample opportunity exists to include courses from other disciplines.

The course listing (pp. 109-112) include all political science courses available for graduate students. Courses numbered 300 to 390 (pp. 109-111) may be taken by undergraduates as well as by graduate students. Courses numbered 400 and above (pp. 111-112) are normally available to graduate students only.

PSYCHOLOGY

Professors

Edmund S. Howe, Arthur L. Irion, director of graduate studies in psychology, Alan Krasnoff, Lewis J. Sherman, chairman and director of clinical training

Associate Professors

Gary Burger, Theresa S. Howe, Robert F. Priest, D. J. Zerbolio

Assistant Professors

John J. Boswell, Charles Gouaux, Donald D. Lisenby, Samuel J. Marwit, Miles L. Patterson, Denton J. Stewart, James T. Walker, David R. Ziff

The Department of Psychology offers graduate work leading to the Ph.D. degree in either clinical psychology or general experimental psychology. There is no program leading to the terminal

M.A. degree in psychology.

The general experimental program intends to acquaint the student, by research apprenticeship and otherwise, with both the antecedents of and the

substantive contemporary scene in animal and human behavior. The clinical psychology program emphasizes both research training and practical involvement in community-oriented clinical activities, including an internship experience.

The Department of Psychology is housed in the Life Sciences Building. Its physical facilities include a psycho-acoustic room, darkroom, drafting room, electrically-shielded room with eight-channel Beckman, environmental chamber, animal housing, surgery suite and comparative and human experimental laboratories. The Psychological Center includes facilities for children, adolescents and adults, in addition to serving as a consulting resource for community agencies.

A limited number of teaching assistantships is available for which the

first-year stipend will be \$3,300. Out-of-state tuition fees are waived for teaching assistants. Those appointed to assistantships, like those otherwise accepted into the graduate programs, will need to have a very good B.A. degree, or otherwise show independent objective evidence of superior potential (e.g. GRE scores).

Graduate students in psychology will generally take only 400-level courses in accordance with a plan of study to be worked out with their advisers. Only under rare conditions will graduate students in psychology be permitted to take any undergraduate psychology course for graduate credit. It is generally anticipated that a full-time graduate student could obtain a doctoral degree in psychology in not less than four continuous years.

anthropology, and social psychology. Although sociological theory and research methodology serve as the common core of the program, students will engage in more specialized study. This specialization will lead to a choice between a written comprehensive examination (option A) or the preparation of a thesis, research report or publishable paper (option B).

Admission In addition to meeting the requirements of general admission to the Graduate School, the following

SOCIOLOGY — ANTHROPOLOGY

Professors

K. Peter Etzkorn, (sociology), Jerome Himelhoch (sociology), George J. McCall chairman (sociology), Solomon Sutker (sociology)

Associate Professors

Sarah Boggs (sociology), Lloyd Collins (anthropology), Muriel Pumphrey (social service), Sara S. Sutker (sociology)

Assistant Professors

Harry H. Bash (sociology), William Erickson (sociology), Richard A. Ferrigno (sociology), Richard C. Gilman (sociology), Thomas H. Hay (anthropology), Sherif Mahmoud el-Hakim (sociology), Stuart Plattner (anthropology), S. B. Scheiner (anthropology), Herman W. Smith (sociology)

The program of graduate studies in sociology leading to the master of arts degree is designed to prepare students for careers in the academic world and in research, or to improve their competence in some professional role involving service to the community.

The department provides specialized curricula in the following areas: the sociology of deviance (including criminology, law and society), urban sociology (including urban race relations),

departmental requirements must be met before a student can be admitted to regular standing:

- (1) Completion of at least nine semester hours of sociology
- (2) Credit in the following courses or their equivalents:
Sociology 110 Sociological Theory
Sociology 120 Quantitative Techniques in Sociology
Sociology 130 Research Methods
- (3) Recommendations from former instructors to the effect that the applicant is capable of doing graduate work at an acceptable level of performance.

In some instances where a student is deficient in the above requirements, it is feasible to make up such deficiencies before entering the degree program.

Program Requirements A candidate for the M.A. degree in sociology is required to complete a minimum of 30 hours of graduate credits, of which 16 credits must be in sociology courses. As part of the required 30 hours of course work, a student must complete the following:

- (1) Sociology 322 Advanced Quantitative Techniques
Sociology 332 Advanced Methodology
Sociology 392 Advanced Sociological Theory
- (2) Two graduate seminars offered by the Department of Sociology (six hours)

The candidate may complete the additional requirements from one of the two following options:

A. By satisfactorily performing on a written comprehensive examination, ordinarily taken in the last semester of course work near the completion of 30 hours of course credit. The

examination will be administered by a committee selected by the graduate faculty of the department and appointed by the graduate dean on the recommendation of the director of graduate studies, and will cover the areas of sociological theory, methodology and quantitative techniques, and one field of concentration chosen by the candidate, ordinarily from the areas of specialization offered in the department.

A student who fails the examination may re-take it once only and within a twelve-month period.

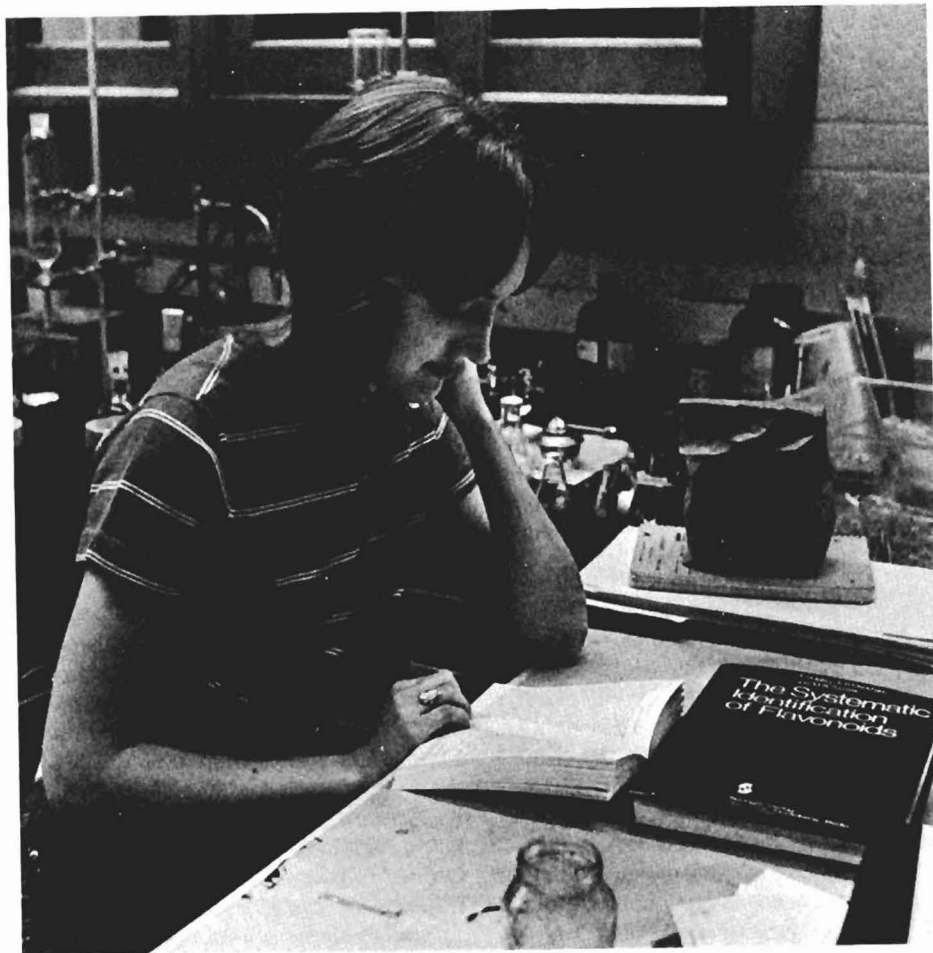
B. By satisfactorily preparing a thesis, research report, or publishable article in conjunction with enrollment in Sociology 490. The instructor in Sociology 490 and the candidate will recommend for appointment by the director of graduate studies a committee representing sociological theory, methodology and quantitative techniques, and his area of research specialization. Under this committee's guidance, the candidate will prepare a proposal, abstracts of which will be circulated to the graduate faculty of the department for their review. Comments on the abstract will be submitted to the committee within a two-week period following its distribution. Upon completion of the thesis, report or article, an oral comprehensive examination focused on the thesis, will be administered by the committee, open to non-voting departmental participation.

Research Facilities Various University-wide programs and facilities can assist the student in his research. Among these are the Computer Center, the Center of Community and Metropolitan Studies, the Administration of Justice Program, the Center for International Studies, the Public Opinion Survey Unit and the Office for Research Administration.
Optional Internship in an Urban Agency As part of his supervised research in

FIELDS of STUDY

Sociology 490, the student who so desires will have the opportunity for placement as a participant observer intern in a community organization or agency. Examples would be organizations in the fields of health, education, welfare poverty, race relations, urban planning, housing, law enforcement, juvenile delinquency or corrections. The student who selects the internship option will simultaneously obtain participant observational data for his research report, publishable article or thesis and, as a possible future practitioner, learn to apply

sociological perspectives to a work situation. In the process he will acquire a measure of familiarity with professional practice in a realistic setting. **Assistantships and Finances** Departmental teaching and research assistantships are available for specially qualified students. Assistantships start at a minimum of \$3,300 for half-time work during the academic year. Students who wish to continue their regular employment outside the university may enroll in the graduate program on a part-time basis.





Description of Courses

Courses for which graduate credit is given are numbered at the 300- or 400-level. Courses in the 400-series are exclusively graduate courses, and undergraduates may enroll in them only in exceptional circumstances with special permission. Courses in the 300-series are for graduates and advanced undergraduates. In exceptional cases, with the permission of his graduate adviser, a graduate student may receive graduate credit for a 200-level course taken in a department other than the department in which he is pursuing a degree. For a listing of 200-level courses, see the General Undergraduate Catalog.

ADMINISTRATION OF JUSTICE

Prerequisites may be waived by consent of department.

- 310 Community Approaches to Prevention and Control of Crime and Delinquency (3)
Prerequisite: 100 and 200 and senior standing or consent of instructor. An analysis of the rationale and the principles of community organizations as they seek to address the problems of crime and delinquency. Programs in the St. Louis metropolitan area will be used as case studies.
- 325 Criminal Law in Action (3)
Prerequisite: Administration of Justice 220, equivalent, or consent of instructor.

An examination of the legal and social objectives of the criminal law and the diverse limitations on the exercise of police powers. Basic concepts of criminal law, their origin and development in Anglo-American jurisdictions.

- 330 Correctional Institutions (3)
Prerequisite: 100 and 200 and senior standing or consent of instructor. The correctional setting as an aspect of the criminal justice system. An analysis of the administrative involvement and a study of the modes of organization and management which seem applicable to these types of settings.
- 340 Probation and Parole (3)
Prerequisite: 100 and 200 and senior standing or consent of instructor. The historical development of the rehabilitative ideal of probation and parole. An analysis of the principles of probation and parole, both juvenile and adult.
- 360 Comparative Justice Systems (3)
Prerequisite: Administration of Justice 200, 220 and senior status. Analysis of the criminal justice systems of selected nations in an attempt to identify similarities and dissimilarities with American practice. Particular attention will be focused upon the police and corrections systems.
- 380 Senior Seminar: Special Problems in Administration of Justice (3)
Prerequisite: Administration of Justice 100 and 200 and senior standing or consent of instructor. Study of selected special problems in the administration of justice. (May be repeated once for credit.)

- 399 **Independent Study and Research (3)**
Prerequisite: 100 and 200 and senior standing or consent of instructor. Directed research and reading. May involve the performance of a research task in cooperation with an operating criminal justice agency. (May be repeated once for credit.)

ANTHROPOLOGY

Prerequisites may be waived by consent of department.

- 301 **Cultures of Middle America (3)**
Prerequisite: Anthropology 11 or consent of instructor. An introduction to Mexico and Central America from an anthropological point of view. The evolution of the indigenous civilizations of the Aztec and Maya, the conquest and colonial experiences, and the development of modern communities.
- 303 **Cultures of South Asia (3)**
Prerequisite: Anthropology 11 or consent of instructor. A survey of the cultures of South Asia including the prehistory of the area, the ethnographic and linguistic groupings, and the social organization and cultural systems of these groups.
- 305 **Cultures of Southeast Asia (3)**
Prerequisite: Anthropology 11 or consent of instructor. A survey of the cultures of Southeast Asia including the prehistory of the area, the ethnographic and linguistic groupings, and the social organization and cultural systems of these groups.
- 307 **Cultures of Native North America (3)**
Prerequisite: Anthropology 11 or consent of instructor. A survey of the aboriginal cultures of North America including the prehistory of the area, the ethnographic and linguistic groupings, and the social organization and cultural systems of these groups.
- 325 **Comparative Social Organization (3)**
Prerequisite: Anthropology 11 or consent of instructor. The range and variation of societal organization primarily in non-Western cultures. Processes of system maintenance and change.

- 327 **Urban Anthropology (3)**
Prerequisite: Anthropology 11. A comparative analysis of the cultural roles of urban centers and the processes of urbanization in non-western and western societies, past and present. A consideration of urban influences on rural America and the traditional peasant and primitive peoples of Africa, Asia and Latin America.
- 335 **Culture Change (3)**
Prerequisite: Anthropology 11 or consent of instructor. An intensive investigation into the elements and processes of culture change with regard to specific theories of culture change. The course examines the relationship between microchange and macrochange in primitive and modern complex societies.
- 337 **Applied Anthropology (3)**
Prerequisite: Anthropology 335 or 381. A description and analysis of the methods, principles and use of practical problems associated with the changing conditions of our times. A wide variety of cross-cultural case studies will be examined.
- 345 **Language and Culture (3)**
Prerequisite: Anthropology 11 or consent of instructor. The relationship between language and culture. Works of Sapir, Whorf, Lee and others will be considered.
- 346 **Grammatical Theory (3)**
Prerequisite: One course in linguistics or consent of instructor. Linguistic analysis of syntax including introduction into formal structures of symbolic, social and cultural behavior.
- 350 **Special Study (credit arranged) (F & W)**
Prerequisite: Consent of instructor. Independent study through readings, reports, or field research.
- 355 **Political Anthropology (3)**
Prerequisite: Anthropology 11 or consent of instructor. A review of the pertinent literature on the political process in native and non-Western societies with emphasis upon local-level politics in traditional-modern interface of emerging nations.

- 365 **Comparative Religions (3)**
Prerequisite: Anthropology 11 or consent of instructor. A survey of supernatural elements of cultural systems and the place of religion in human societies with emphasis upon non-Western traditional societies.
- 377 **Culture and Personality (3) (Same as Sociology 377)**
Prerequisite: Sociology 10 or 20, at least junior or graduate standing or consent of instructor. Analysis of behavior from the standpoint of interaction between psychological systems, sociological systems and cultural systems.
- 381 **Theories of Anthropology (3)**
Prerequisite: Anthropology 11 or consent of instructor. An introduction to the various developments in theoretical anthropology through a reading of source material.
- 391 **Current Issues in Anthropology.**
Prerequisite: Anthropology 11 or consent of instructor. Selected topics in social, cultural, and physical anthropology, with emphasis on current issues and trends in the field of anthropology. May be repeated.

BIOLOGY

Prerequisites may be waived by consent of department.

- 305 **Morphology of Nonvascular Plants (3) (Alt.F)**
Prerequisite: Biology 250 or consent of instructor. An intensive study of algae through the mosses and liverworts, stressing relationships between the groups. Field studies and phytoecology stressed. Three lecture hours per week.
- 306 **Morphology of Vascular Plants (3) (Alt. W)**
Prerequisite: Biology 250, or permission of instructor. An intensive study of ferns through angiosperms, stressing relationships between the groups. Field studies and phytoecology stressed. Three lecture hours per week.
- 307 **Nonvascular Plant Laboratory (2) (Alt. F)**
Laboratory to accompany Biology 305. Three and one half hours per week.
- 308 **Vascular Plant Laboratory (2) (Alt. W)**
Laboratory to accompany Biology 306. Three and one half hours per week.
- 310 **Cellular Biology (3)**
Prerequisites: Biology 213, 215 and 224. Cellular metabolism and structure. Three hours lecture per week.
- 317 **Immunobiology (3)**
Prerequisite: Biology 276, Chemistry 261 and 263. The fundamental principles and concepts of immunology and immunochemistry. Emphasis on the relation of immunological phenomena to biological phenomena and biological problems. Three hours lecture per week.
- 319 **Immunobiology Laboratory (2)**
Prerequisite: Biology 317 (may be taken concurrently). Basic experimental laboratory procedures in immunology. Introduction to experimental evidence underlying concepts of immunology. Three and one-half hours laboratory per week.
- 321 **Advanced Genetics (3)**
Prerequisite: Biology 224. Selected topics in genetic theory. Three hours lecture per week.
- 322 **Cytogenetics (3)**
Chromosome structure, function, and behavior and the origin and evolutionary significance of various cytological systems. Three hours lecture per week.
- 323 **Advanced Genetics Laboratory (2)**
Prerequisite: Biology 321 (may be taken concurrently). Instrumentation and experimental studies in genetic analysis. Three and one-half hours laboratory per week.
- 324 **Cytogenetics Laboratory (2)**
Prerequisite: Biology 322 (may be taken concurrently). Laboratory to accompany Biology 322. Three and one-half hours laboratory per week.

BIOLOGY

- 330 **Advanced Development (2)**
Prerequisites: Biology 213, 235 and 276. A discussion of experimental approaches as applied to the analysis of development. Two hours lecture per week.
- 332 **Advanced Development Laboratory (3)**
Prerequisite: Biology 330 (may be taken concurrently). Instruction and practice in the application of experimental techniques to the study of development. Seven hours laboratory per week.
- 334 **Plant Growth and Development. (3) (Alt. W)**
Prerequisite: Biology 250, or permission of instructor. Developmental processes in plants will be viewed from both morphological, anatomical and physiological standpoints. The interplay of controlling chemical, physical and biological factors will be discussed. Three hours lecture per week.
- 336 **Plant Growth and Development Laboratory (2) (Alt. W)**
Laboratory to accompany Biology 334. Three and one-half hours per week.
- 342 **Population and Community Ecology (3)**
Prerequisite: Biology 242. Studies of the structure and organization of natural communities stressing the abundance and distribution of species, the regulation of species and the evolution of demographic parameter in population. Three hours lecture per week.
- 344 **Population and Community Ecology Laboratory (2)**
Prerequisite: Biology 342 (may be taken concurrently). Laboratory and field studies of the organization of communities. Three and one-half hours laboratory per week.
- 360 **Techniques in Electron Microscopy (2) (Alt. W)**
Prerequisite: Junior standing and Biology 10. A general consideration of the application of electron microscopy to biological research. Discussion of transmission and scanning electron microscopy and associated techniques of specimen preparation. Designed for the professional biologist. Two lecture hours per week.
- 362 **Electron Microscopy Laboratory (3) (Alt. W)**
(Must be taken concurrently with Biology 360. Permission of instructor required). Students will develop skill in techniques associated with transmission and scanning electron microscopy and learn instrument operation and minor servicing. Individual research problems. Seven hours laboratory per week.
- 376 **Advanced Metabolism (3)**
Prerequisite: Biology 276. Topics include control of cellular metabolism, membrane transport, mechanisms of action of enzymes and hormones, and enzyme kinetics. Three hours lecture per week.
- 378 **Advanced Metabolism Laboratory (2)**
Prerequisite: Biology 278 or consent of instructor. Independent projects related to metabolic control, using advanced analytical and synthetic procedures. Three and one-half hours laboratory per week.
- 381 **Biochemical Systematics (3) (Alt. W)**
Prerequisite: Biology 10 and Junior standing, or consent of instructor. Biosynthetic relationships of secondary compounds and their implications to taxonomy, phylogeny, and population biology. Three lecture hours per week.
- 383 **Biochemical Systematics Laboratory (2) (Alt. W)**
Prerequisite: Biology 381 must be taken concurrently. Techniques and instrumentation necessary for the isolation and identification of the various types of secondary compounds considered. Three and one-half hours per week.
- 392 **Special Topics (Arranged)**
Prerequisite: Junior standing and consent of instructor. Selected topics in biology. The topics will vary each semester. May be taken more than once for credit.
- BUSINESS ADMINISTRATION**
Prerequisites may be waived by consent of department.

BUSINESS ADMINISTRATION

300-level courses may be used for graduate credit only if approved by adviser as a part of degree program.

**Starred prerequisites may be taken concurrently with listed offering.*

- 301 **Buyer Behavior (3)**
Prerequisite: Business Administration 106 and three hours of psychology or sociology, or consent of instructor. A study of consumer functions and concepts in economics, marketing and related subjects such as decision-making, attitude formation, cognition, perception and learning are related to marketing phenomenon — product image, brand loyalty, shopping preference, diffusion of innovations. These are considered in context with political, social, market and legal influences on buyer behavior.
- 302 **Quantitative Marketing Methods (3)**
Prerequisite: Basic Marketing 106, Finite Mathematics 102 or permission of instructor. Applications of stochastic, deterministic and simulation techniques to decision areas, such as market potential, product diversification, physical distribution alternatives, retail location, media selection and market exposure. Quantitative and computerized methods are used heavily to enhance decision-making in marketing, especially the selection, allocation, budgeting and forecasting of marketing resources.
- 308 **Production and Operations Management (3)**
Prerequisite: Fundamentals of Production 202 and Mathematics 101 and Mathematics 102. Application of the tools and techniques of statistical decision theory and operations research to production and operating problems. Emphasis is on the use of mathematical modeling and simulation techniques to analyze complex and ill-structured problems in large scale systems.
- 310 **Management as a Behavioral Science I (3) (Formerly Management as a Behavioral Science)**
Prerequisite: Economics 51 and Elementary Statistics 31. Management from a historical perspective. Nature, meaning and psychological significance of work. Functions and responsibilities of managers. Contributions of the behavioral sciences. Measurement and analysis of human behavior. Matching the man to the job. Managerial styles and types of authority. Employee satisfaction, motivation and productivity.
- 311 **Management as a Behavioral Science II (3)**
Prerequisite: Business Administration 310. The organization as a social system. Interpersonal relations and social exchange. Modification of human behavior. Methods of change and their dysfunctional consequences in the organization. Technology as a determinant of work behavior. Labor relations and human relations. Major organizational concepts and theories.
- 312 **Industrial and Labor Relations (3)**
Prerequisite: Business Administration 310. Emphasis on labor unions and their relationship with management. Labor laws, trade union structure and government, collective bargaining, arbitration and grievance procedures are studied.
- 315 **Marketing Management (3)**
Prerequisite: Senior standing and nine (9) hours in marketing, including Business Administration 106 or consent of instructor. An intensive analysis of major marketing decisions facing the firm, such as level, mix, allocation and strategy of marketing efforts. Specific decision areas investigated include market determination, pricing, physical distribution, product policy, promotion, channel management and buyer behavior. Competitive, political, legal and social factors that may affect such areas of decision are discussed. Cases, models and problems are used heavily.
- 318 **Industrial Psychology (3) (Same as Psychology 218)**
Prerequisite: Psychology 201 or Management as a Behavioral Science 310. Activities of the applied psychologist. Selection and placement, testing and interviewing, personnel research. Morale, motivation and job satisfaction. Leadership skills and

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- styles, creative management, industrial mental health. Psychology in advertising and marketing.
- 331 **Multivariate Analysis (3)**
Prerequisites: Elementary Statistics 31, Mathematics 101 and Mathematics 102. A study of statistical techniques applicable to multi-variable relationships.
- 334 **Investments (3)**
Prerequisite: Financial Management 204. Financial analysis of debt and equity instruments available on organized exchanges and in less tangible "over the counter markets." Techniques of such analysis being presented in context with economic and management circumstances within the company, industry and economy.
- 340 **Intermediate Accounting Theory (3)**
Prerequisites: Fundamentals of Financial Accounting 140 and Fundamentals of Managerial Accounting 145 with a minimum grade of "C" in each (or consent of department) and *Elementary Statistics 31. The development of a structure of financial accounting theory and an analysis of asset valuation methods emphasizing their effect on income determination.
- 341 **Advanced Accounting (3)**
(Includes a continuation of the intermediate text and topics from the advanced text.) Prerequisite: Intermediate Accounting Theory 340, minimum grade of "C" (or consent of department). Application of accounting theory to equity valuation and the related effects on income determination. Other topics include accounting for price level changes, partnerships and fiduciaries.
- 342 **Consolidations and Specialized Accounting Problems (3)**
(Contains some topics previously covered in Advanced Accounting 322 and some topics not previously covered.) Prerequisite: Advanced Accounting 341, minimum grade of "C" (or consent of department). Accounting theory and practice relating to: consolidated financial statements, business combinations, foreign subsidiaries, corporate liquidation and reorganization and non-profit organizations.
- 345 **Cost Accounting (3)**
Prerequisite: Fundamentals of Managerial Accounting 145, minimum grade of "C" (or consent of department). Basic principles of cost determination and control of manufacturing and distribution activities; emphasizes the accumulation and tracing of cost to products, processes and responsibility centers for purposes of financial accounting and management control. Topics include: job-order and process costing and the development and use of standard costs within a system of absorption costing.
- 347 **Income Taxes (3)**
Prerequisites: Fundamentals of Financial Accounting 140 and Fundamentals of Managerial Accounting 145, minimum grade of "C" in each (or consent of department). Fundamentals of Federal income tax accounting with emphasis on individuals and corporations. Topics covered include: determination of income, exclusions, exemptions, personal and business deductions and tax credits.
- 348 **Auditing (3)**
Prerequisite: Advanced Accounting 341, minimum grade of "C" (or consent of department). Examination of fundamental audit objectives and techniques employed in the verification, analysis and interpretation of accounting records and financial statements. The work of the independent public accountant is emphasized to include the standards of professional performance.
- 349 **Managerial Aspects of Taxation (3)**
Prerequisite: Income Taxes 347. A study of taxation and tax issues, including the planning, in the managerial decision making process. Research directed to the solution of business tax problems.
- 350 **Financial Policies (3)**
Prerequisite: Financial Management 204. The intensification and application of the concepts developed in Finance 204. Special emphasis is given to the development of top management policies and their application toward complex problems of finance. Techniques for identifying and dealing with these problems before they become acute will be investigated. Cases will be integrated with appropriate outside reading.

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- 368 **Business Fluctuations and Forecasting (3)** (Same as Economics 368)
Prerequisite: Economics 220. Discussion of factors affecting economic conditions, short-term fluctuations in business activity and plans and policies for economic stabilization. Emphasis on problems and techniques of forecasting aggregate and industry demand.
- 375 **Operations Research (3)**
Prerequisites: Elementary Statistics 31, Mathematics 101 and Mathematics 102. Application of the theories and techniques of operations and research to problems of business, government and industry; with emphasis on the construction and utilization of quantitative decision models.
- 380 **International Business (3)**
Prerequisite: Economics 51. U.S. in the world economy; emerging nations; foreign exchange market; foreign investment; commercial documents; world trade; management of enterprises abroad.
- 385 **Mathematical Programming (3)**
Prerequisites: Elementary Statistics 31, Mathematics 101 and Mathematics 102. A study of mathematical programming theory and algorithmic developments. Consideration is given to linear programming, integer programming, quadratic programming, dynamic programming and other related techniques.
- 391 **Business Policy and Administration (3)**
Prerequisites: Senior standing, Basic Marketing 106, Financial Management 204 and Management as a Behavioral Science 310. Comprehensive cases are used to examine the dynamics of business management. The role of high echelon management in the administrative process is integrated with the diverse functions of business to develop an operation system. Particular attention is given to formulation of a policy framework, planning and implementing executive action. Both team and individual analyses and reports are utilized with class evaluation and recommendation.
- 395 **Business Administration Seminar (Variable credit)**
Prerequisite: To be determined each time the course is offered. May be repeated for credit.

Accounting

- 440 **Financial Accounting: Theory and Practice (3)**
Business organization, operations and terminology. A survey of the broad areas of accounting, including its mechanism. Emphasis on the development of a logical framework of underlying concepts upon which practices and procedures are superimposed. Intensive study of balance sheet, income statement and other financial reports, together with the accounting principles underlying them. Statements designed for stockholders and creditors. The interpretative and analytical point of view is stressed. PAGE, TERRE, TURNER
- 441 **Concepts in Management Accounting (3)**
Prerequisite: Accounting 440. The development, interpretation and uses of accounting reports and supplementary information for management planning, control and decision-making. Emphasizes the application of relevant cost behavior, control and traceability concepts in the preparation of internal accounting reports, with a secondary emphasis upon product costing techniques as appropriate to financial accounting needs. Topics include breakeven analysis, operational budgeting, direct costing, absorption costing, standard costs and variance analysis, business segment analysis, responsibility accounting and distribution cost accounting, gross profit analysis. SCHUCHARDT
- 445 **Seminar in Advanced Theory and Contemporary Issues in Accountancy (3)**
Prerequisite: Accounting 440. Consideration of the positions of several authoritative groups concerning the structure of accounting theory — assumptions, postulates, principles and practices. Evaluation of these positions in view of confirming and conflicting periodic literature. Critical analysis of

- topics of current interest and importance in accounting literature. COX, TERRE
- 446 **Topics in Professional Accounting (3)**
Prerequisite: Accounting 440 and Quantitative 481. An investigation of the impact of past, current and prospective developments upon the role of the professional accountant. Topics include professional ethics, generally accepted auditing standards, types of auditor's opinions, internal control and internal auditing, the use of probability theory and statistical sampling methods in the conduct of an audit, management advisory theory and statistical sampling methods in the conduct of an audit, management advisory services, auditing in mechanized and electronic data processing systems, requirements imposed by the S.E.C. and other regulatory agencies, legal responsibilities. COX, PAGE
- 447 **Financial Information Systems in Modern Business (3)**
Prerequisite: Accounting 440 and Quantitative 480. Application of systems concepts to accounting procedures and reporting systems to facilitate internal management control. Topics include the analysis and determination of true requirements of the system, design and implementation of new systems to fulfill such requirements, application of integrated data processing concept to accounting systems designed to maximize accounting data obtained with a minimum number of operations, use of "flowchart" principles to facilitate comprehension of the overall effect of related accounting procedures, and total accounting reporting systems to facilitate internal control through appropriate control instruments, geared to the organizational structure, for the attainment of corporate goals, both operational and financial. Application of these concepts is made through practical case studies assigned to each student for class presentation. AMEISS
- 411 **Analysis of National Economic Environment (3)**
The character and functioning of the national economic system; analyzing and forecasting fluctuations in national income and product, employment and prices; the impact of these changes on business management; the influence of monetary and fiscal policies. Emphasis is on the acquisition of analytical tools for a better understanding of the forces affecting all business firms and for predicting national trends.
- 412 **Public Policies Toward Business (3)**
Analysis of public policies, as represented by laws, court decisions and other governmental activities, as they affect efficiency in the public and private sectors, employment and price levels, and business decision-making. YOUNG, WITTERIED
- 415 **Societal Environment and Management Decisions (3)**
Prerequisite: Business Administration 410 and 411. An examination of the external relationships of a business enterprise with the broad and diverse interests of society. These are government and social forces that sometimes operate counter to the potential dictates of theoretical internal economic policies for an individual organization. The primary objective is to examine the increasingly complex set of interrelationships among business, government other economic groups, and "the public." A series of major current problems, chosen to raise some of the major issues involved in these interrelationships, and in particular to explore the development of public policy on such problems.
- 416 **International Finance, Investment and Commerical Relations (3)**
Prerequisite: Business Administration 411. The international monetary system; balance of payments; liquidity;
- Business Administration**
- 410 **Managerial Economic Analysis (3)**
Microeconomic analysis focused toward better decision-making in the individual

- foreign-exchange market; foreign investment; international and regional financial institutions. Commercial documents; United States trade patterns, composition and structures; United States commercial policy; regional trade groupings; trade of emerging nations; international trade organizations. KAGAN
- 417 **International Business Operations (3)**
Prerequisite: Business Administration 416. Functional management within multinational corporations; case studies of operations abroad; focus on managerial decision-making. KAGAN
- 420 **Seminar in Business Administration (3)**
An intensive study of a specific area of business administration of some specific business or economic phenomenon, or a specific problem or theory. Several different courses may be offered under this course number. A decimal number following the course number is assigned as further identification of the area studied.
- 430 **Individual Research (credit arranged)**
Prerequisite: Permission of the professor, dean and graduate committee. Occasional special individual research topics under the guidance of a specific professor.
- 490 **Policy Formulation and Administration (3)**
Prerequisites: Accounting 440, Finance 450, Management 460, Marketing 470 and Quantitative 482. This course should be taken during the semester prior to graduation. In no case may it be taken sooner than two semesters prior to graduation. A capstone case course which views policy problems and issues from the perspective of top management. Policy formulation, decision-making processes and corporate strategy. Implementation of corporate policy requires an examination of leadership, communication, organizational structure and social responsibility. STICH, WITTERIED
- 451 **Advanced Financial Management (3)**
Prerequisites: Finance 450, Quantitative 480 and 481. Exposure to recent financial management theory through selected readings. Financial management problems are considered by the use of cases and simulation models. An original research project under the supervision of the instructor is required. ROGOFF, STICH
- 455 **Investment Analysis (3)**
Prerequisite: Finance 450. A study of the techniques used in the evaluation of various investment media. These techniques include methods of evaluation of life insurance, fixed dollar contracts, bonds, preferred stock and common stock as investment opportunities, and the sources of investment information. D'ANTONI, HOFFMEISTER
- 456 **Management of Financial Intermediaries (3)**
Prerequisite: Business Administration 441, Finance 451 or concurrent registration. A consideration of the unique problems of management of institutions which form the money and capital markets in the United States. The impact of monetary and fiscal policies on the dynamic management of the financial assets of numerous financial intermediaries: commercial banks, insurance companies, savings and loan associations, investment bankers, and investment companies. DRIEMEIER, ROGOFF
- Finance**
- 450 **Financial Management (3)**
Prerequisite: Accounting 440. A

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- 457 **Advanced Concepts and Techniques for Securities Analysis (3)**
Prerequisite: Finance 451. A study of the advanced techniques applied to the evaluation of various securities. Traditional portfolio management considerations as well as current work in theoretical finance. The use of simulation and mathematical models to optimize the return on portfolios is discussed. HOFFMEISTER

Management

- 460 **Administrative Processes (3)**
Managing organizational and behavioral elements in the production and personnel functions of a business enterprise. Planning, organizing and controlling resources and activities; integrating and motivating personnel in the business organization. Special attention is given to the functions of managers and to the leadership role of the manager in production and personnel operations. Cases and selected readings are utilized to broaden the student's appreciation of the administrative process. GUSTAFSON, KUEHL
- 461 **Organization Theory and Group Behavior (3)**
Prerequisite: Management 460. Examination of selected theories affecting individual behavior and operating performance in organizations. Formal and informal organization, communication, the decision-making process and the bureaucratic process are analyzed for their structural impact. The course seeks to develop in each student an ability to analyze and evaluate organizational conditions and to increase his understanding of human behavior. NORTON, THUMIN
- 465 **Union-Management Relations and Collective Bargaining (3)**
Prerequisite: Management 460 and Business Administration 412. Primary concern is with the setting and the dynamics of contract negotiation and administration. Emphasis is on the development of insight and understanding of the forces affecting the decisions of the parties to a labor contract within the context of the social, political and

economic environment of the organization. A dynamic approach is taken to examine difficulties that arise in attempting to administer a collectively established relationship between employer and employee. WITTERIED

- 466 **Personnel Appraisal (3)**
Prerequisite: Quantitative 481 and Management 460 or academic background in general psychology. Theory and techniques of human assessment, including the personnel interview, employee-ratings, attitude scaling, ability and personality testing. Consideration of the potentials and limitations of each technique. THUMIN
- 467 **Dynamics of Interpersonal Relations (3)**
Prerequisite: Management 460 or academic background in general psychology. The self-concept, personality dynamics and mechanisms of adjustment. Catalysts and barriers to effective communication. Examination of the functional relationship between ego-needs, perceptual distortion and stereotypic thinking. Role-playing, the resolution of role-conflict and objective self-evaluation. The development of cooperation and trust as a prerequisite to effective human relations. DIMARCO

Marketing

- 470 **Contemporary Marketing Concepts (3)**
Prerequisite: Accounting 440 and Business Administration 410. Designed for students with no prior coursework in the field of marketing. A wide spectrum of marketing institutions and activities is covered. The impact of marketing on the total firm, the economy and society in general is assessed. The course is intended to develop and organize the fundamental marketing concepts necessary to an analytical study of consumer behavior, the economic environment and four managerial aspects of marketing. The acquisition and utilization of marketing. The acquisition and utilization of marketing research data for problem solving is stressed. Relation and integration of basic marketing knowledge to the successful development

of sound marketing policy, planning and strategy is developed. MAY, TUSHAUS, WIMS, WONG

- 471 **Marketing Planning and Strategy (3)**
Prerequisites: Accounting 440, Business Administration 410 and Marketing 470. Emphasizes the development of a total marketing program through an analytical study of the marketing-mix, the diagnosis of the business situation, along with the influence of exogenous variables and the development of an effective overall marketing strategy. Stresses importance of an integrated marketing plan and utilizes modern decision-making tools. Supplementary readings, journal articles and current periodicals are used to place the theoretical framework of the course into the contemporary environment of the market place. TUSHAUS, DOMINGUEZ
- 475 **Consumer Motivation and Behavior (3)**
Prerequisite: Marketing 470. An analysis of the socio-psychological foundations of consumer behavior including personality differences, needs and wants, status symbols, social change and mobility, fads and fashions. Consumer spending and saving habits, product preferences, leisure-time patterns, shopping behavior and motivation research also are examined for their impact on advertising, selling and marketing management. MAY, WONG
- 476 **Marketing Communications (3)**
Prerequisite: Marketing 470. Deals with managerial decision-making by placing particular emphasis on assimilating and integrating all forms of marketing communication in the development of promotional policies, plans and procedures. Course approach is analytical rather than descriptive in investigating the areas of advertising, public relations, sales management, packaging and other forms of demand stimulation. TUSHAUS, WIMS
- 477 **Product Planning and Pricing (3)**
Prerequisite: Marketing 471 or concurrent registration. A study of product management including the areas of new product development, the concept of the product line, deletion of nonessential products and establishing

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the product's price. Also examined are pricing alternatives and the factors influencing pricesetting in the framework of a contemporary market structure. DOMINGUEZ

- 478 **Marketing Intelligence Systems (3)**
Prerequisite: Marketing 471 or concurrent registration. A broad approach to marketing research as a model for acquiring, retrieving and analyzing decision-making information. Includes market measurement, evaluation of sales and cost effectiveness, sales forecasting and primary marketing research studies aimed at solving specific problems. Emphasis is placed also on building a theoretical and analytical framework to provide flexibility in the design of marketing experiments and in judging recent research innovations. MAY, TUSHAUS
- 479 **Distribution Management (3)**
Prerequisite: Marketing 471 or concurrent registration and Quantitative 482. A study of the marketing institutions involved in the distribution of goods and services, industrial and consumer markets, as well as the establishment and integration of marketing channels. The planning and analysis of the macrodistribution and microdistribution systems which contribute to creation of optimal time and place utility. Some attention is paid to quantitative applications to marketing situations including simulation and logistics. WONG

Quantitative Management Science

- 480 **Computer Programming and Applications (3)**
Introduction to basic computer organization and computer programming. A particular computer, machine language, compiler language and programming system is used extensively to illustrate concepts and to give the student actual experience in programming and implementing both numerical and non-numerical business oriented computer systems. BALTZ, MARKLAND

- 481 Statistical Analysis for Management Decisions (3)**
Prerequisite: Quantitative 480. Development of the role of statistical evidence in the formation of inference and in the selection of strategies in solving business problems. Probability and probability distributions are studied as a basis of inference and applying Bayesian decision methods. An approach to multivariate analysis provides an integration of analysis of variance and regression methods. CORBEAU, BALTZ
- 482 Operations Research Methods (3)**
Prerequisite: Quantitative 481. Development of a working knowledge of operations research techniques, as applied to dynamic business problems. A study of analytical approaches to business problems, construction of mathematical models and manipulation of model variables for managerial decision-making. Topics include mathematical programming, inventory theory, game theory, queuing theory, sequencing models and simulation models. MARKLAND, MEYER
- 483 Production and Operations Management (3)**
Prerequisite: Quantitative 482. A study of the basic problems encountered in the administration of the production function. Topics include interpreting the production function, schematic, statistical and economic analysis of production problems and production simulation models. The case method is used extensively in the course. BRUMBAUGH
- 485 Computer Information Systems: Development and Application (3)**
Prerequisite: Quantitative 480. A study of properties and capacities of data processing techniques in use today and of prospective equipment and system developments. Management's part in system planning and development is emphasized.
- 486 Advanced Statistical Methods For Management Decisions (3)**
Prerequisite: Quantitative 481. A study of statistical methods applicable to specialized areas of statistical analysis.

- Topics include Markov Processes, distribution-free tests, sampling theory and methods, experimental design, time series analysis and spectral analysis. CORBEAU, BALTZ
- 487 Advanced Operations Research Applications (3)**
Prerequisite: Quantitative 482. Application of operation research techniques to business problems. After a brief review of these techniques, followed by an examination of typical applications reported in the literature, the major portion of the term is spent, in analyzing and solving an actual business operations research problem. A team approach is used, with groups of two or three students responsible for finding and solving an operations research problem in a local company. Primary emphasis is placed on the use of operations research techniques to solve management problems. MARKLAND, MEYER

CHEMISTRY

Prerequisites may be waived by consent of department.

- 310 History of Chemistry (3)**
Prerequisite: Chemistry 11 and 12 or consent of instructor. The development of chemistry, including early theories of matter, alchemy, iatrochemistry, the period of Lavoisier and selected topics from the 19th and 20th centuries. Three hours lecture per week.
- 324 Instrumental Analysis (3)**
Prerequisite: Chemistry 222, 234. Modern instrumental methods, including nuclear magnetic resonance, electron spin resonance, mass spectrometry, spectrophotometry, x-ray diffraction and others. Two hours lecture and three and one-half hours laboratory per week.
- 325 Qualitative Organic Analysis (3)**
Prerequisite: Chemistry 264. Laboratory and instrumental methods for the systematic identification of organic compounds. One hour lecture and seven hours laboratory per week.
- 333 Thermodynamics (3)**
Prerequisite: Chemistry 232. Selected

advanced topics including solid-state, non-equilibrium and statistical thermodynamics. Three hours lecture per week.

- 336 Introduction to Quantum Chemistry (3)**
Prerequisite: Chemistry 231 or consent of instructor. A brief but quantitative introduction to the application of quantum mechanics to problems in chemistry, covering the uncertainty principle, operators, solution of Schrodinger's equation for simple systems, perturbation theory, variation method, interaction of radiation with matter, atomic and molecular structure and theory of collisions. Three hours lecture per week.
- 341 Inorganic Chemistry I (3)**
Prerequisite: Chemistry 341 (may be taken concurrently). A systematic study of the structure and properties of the elements and their compounds, with emphasis on the correlation of chemical properties with theoretical concepts. Three hours lecture per week.
- 342 Inorganic Chemistry II (3)**
Prerequisite: Chemistry 341. Continuation of Chemistry 341 with emphasis on such topics as metals, non-aqueous solvents, chemical dynamics, organometallic chemistry, chemistry of the less common elements and certain frontier areas. Three hours lecture per week.
- 343 Inorganic Reactions (2)**
Prerequisite: Chemistry 341 (may be taken concurrently). The more sophisticated techniques of physical and analytical chemistry will be used to study inorganic compounds and their reactions. One hour lecture and four and one-half hours laboratory per week.
- 352 Nuclear Chemistry (3)**
Prerequisite: Chemistry 232. Properties of radioactive nuclei, nature of radioactivity, nuclear reactions and applications of nucleonics to chemistry. Three hours lecture per week.
- 361 Advanced Organic Chemistry (3)**
Prerequisite: Chemistry 262. Contemporary developments in the study of the structure of carbon compounds and the mechanism of their reactions. Selected topics such as natural products, heterocyclic compounds, stereochemistry, aromaticity, reaction intermediates and photochemistry will be included. Three hours lecture per week.
- 363 Advanced Organic Synthesis (2)**
Prerequisite: Chemistry 264. Advanced synthetic methods of organic chemistry, One hour lecture and seven hours laboratory per week.
- 365 Advanced Organic Laboratory (Credit arranged)**
Prerequisite: Chemistry 264. Lectures on physical methods in organic chemistry including nuclear magnetic resonance, mass spectroscopy, optical rotatory dispersion, supplemented by individual laboratory experiments depending upon the student's background. Two hours laboratory lecture; laboratory arranged.
- 366 Physical Organic Chemistry (3)**
Prerequisite: Chemistry 262 and Chemistry 232 (may be taken concurrently). Advanced topics in the theory of organic chemistry, including conformational analysis, reaction kinetics and mechanisms and transition state theory. Three hours lecture per week.
- 371 Biochemistry (3)**
Prerequisite: Chemistry 263. The isolation, chemical characterization and function of the structural and catalytic components of living cells and subcellular particles. Three hours lecture per week.
- 372 Advanced Biochemistry (3)**
Prerequisite: Chemistry 371. Selected advanced topics in the chemistry of life processes. Three hours lecture per week.
- 373 Biochemical Techniques (2)**
Prerequisite: Chemistry 371 (may be taken concurrently). Laboratory study of biochemical processes in cellular and subcellular systems with emphasis on the isolation and purification of proteins (enzymes) and the characterization of catalytic properties. One hour lecture and three and one-half hours laboratory per week.

- 374 **Advanced Biochemistry Laboratory (2)**
Prerequisite: Chemistry 372 and 373 (latter may be taken concurrently)
Continuation of Chemistry 373. Laboratory to accompany Chemistry 372. One hour lecture and three and one-half hours laboratory per week.
- 380 **The Teaching of Chemistry in Colleges and Universities (1)**
Prerequisite: Consent of instructor.
A study of the history of the teaching of chemistry and the methods of instruction and evaluation used in the discipline.
- 414 **Molecular Spectroscopy (3)**
Prerequisite: Chemistry 232. A broad treatment of the interaction of electromagnetic radiation with matter, emphasizing the unity of such interactions. Interpretation of molecular structure in terms of molecular, electronic and geometric structure and dynamics. Description and interpretation of physical techniques applied to chemistry. Three hours lecture per week.
- 415 **Organometallic Chemistry (3)**
Prerequisite: Consent of instructor. A systematic study of the compounds containing a carbon-metal or a carbon-metalloid bond. Emphasis will be placed upon the structural types and chemical reactivity of this class of compounds. Topics will also include the role of organometallic compounds in synthesis and their catalytic behavior. Three hours lecture per week.
- 416 **Chemical Applications of Group Theory (3)**
Prerequisite: Chemistry 232. A brief introduction to the fundamental relationships of group theory. Application of group theory to molecular orbital theory, molecular vibrations and molecular spectra. Three hours lecture per week.
- 417 **Environmental Chemistry (3)**
Prerequisite: Consent of instructor. Selected topics in the chemistry of the environment including air and water pollution. Subjects to be discussed include photochemical smog, gaseous and particulate contamination, biodegradability of chemicals and chemical effects of contaminants on living species. Three hours lecture per week.
- 431 **Advanced Chemical Calculations (3)**
Prerequisite: Mathematics 201 and Chemistry 232. Advanced application of analytical techniques to chemical problems; complex variables, linear algebra, and series techniques. Three hours lecture per week.
- 433 **Statistical Mechanics (3)**
Prerequisite: Chemistry 333 and Chemistry 431. Consideration of topics of chemical-physical interest including thermophysical properties of fluids and solids, Fermi-Dirac and Bose-Einstein fluids, theory of fluctuations, and irreversible processes. Three hours lecture per week.
- 434 **Interaction of Electromagnetic Radiation and Matter (3)**
Prerequisite: Chemistry 436. Treatment of the theoretical description of interaction between atoms and molecules and electromagnetic fields. Includes such topics as electromagnetic field theory, spin systems in electromagnetic fields, time-dependent perturbation theory, emission and absorption of radiation, and selected applications to chemical and physical systems. Three hour lecture per week.
- 436 **Quantum Chemistry II (3)**
Prerequisite: Chemistry 336 and Chemistry 431. Advanced theoretical concepts; properties of many electron systems, angular momentum, atomic and molecular structure. Three hours lecture per week.
- 439 **Special Topics in Physical Chemistry (3)**
Prerequisite: Consent of instructor. Selected topics in physical chemistry; may be taken more than once for credit.
- 441 **Typical Element Chemistry (3)**
Prerequisite: Chemistry 342. Chemistry of the main group elements and their compounds including such topics as electron deficient compounds, acids, bases and non-aqueous solvents, catenation and inorganic polymers, the solid state, organo-typical element chemistry and energetics. Three hours lecture per week.

- 442 **Coordination Chemistry (3)**
Prerequisite: Chemistry 342. The chemistry of the coordination compounds of the transition metals including such topics as kinetics and mechanisms of reaction, stereochemistry, ligand field theory, stability and organo-transition element chemistry. Three hours lecture per week.
- 443 **Physical Inorganic Chemistry (3)**
Prerequisites: Chemistry 342, 414 and 416. Study of physical concepts with emphasis on physical methods applied to inorganic systems, spectral and magnetic properties of coordination compounds and application of bonding theories to inorganic chemistry. Three hours lecture per week.
- 449 **Special Topics in Inorganic Chemistry (3)**
Prerequisite: Consent of instructor. Selected topics in inorganic chemistry; may be taken more than once for credit.
- 463 **Stereochemistry (3)**
Prerequisite: Chemistry 361 or 366. A study of molecular geometry and relationships in space between atoms and groups in a molecule. Topics to be covered include optical isomerism, conformational analysis, asymmetric synthesis and topology. Three hours lecture per week.
- 464 **Organic Photochemistry (3)**
Prerequisite: Chemistry 361 and Chemistry 366. A study of the synthetic and theoretical aspects and applications of light induced reactions. Topics to be covered include primary photo-physical processes, reaction types, photosensitization. Three hours lecture per week.
- 465 **Chemistry of Natural Products (3)**
Prerequisite: Chemistry 361. The chemistry and physiological action of natural products; methods of isolation, determination of structures, synthesis and biosynthesis. Three hours lecture per week.
- 469 **Special Topics in Organic Chemistry (3)**
Prerequisite: Consent of instructor. Advanced topics of special current interest. May be taken more than once for credit.
- 489 **Chemistry Colloquium (1)**
Presentation of papers by students, faculty and invited speakers. One hour per week.
- 490 **Graduate Research in Chemistry (Credit Arranged)**

ECONOMICS

Prerequisites may be waived by consent of department.

- 301 **The Urban Environment and Planning (3)**
Prerequisite: At least junior or graduate standing or 12 hours in social sciences. A survey of the development of urban America and the associated crises and of the origins and early practice of planning, role of the profession in modern society, Federal and State programs that affect urban development through the planning profession and current changes in the practice of planning.
- 302 **Systems Analysis for Urban Planning Problems (3)**
Prerequisite: At least junior or graduate standing and Economics 50 and 51 or consent of instructor. Applications of systems analysis of the planning program. Emphasis upon Planning Programming and Budgeting (PPB), costing, cost-benefit, cost effectiveness studies and information systems for urban planning and decision-making; covers review and evaluation techniques.
- 316 **Public Finance: Federal (3)**
Prerequisite: Economics 50 and Economics 51. The nature and scope of public finance. Analysis of expenditure, revenue and financial administration of the Federal government, with emphasis on current problems.
- 317 **Public Finance: State and Local (3)**
Prerequisite: Economics 50 and Economics 51. A study of expenditure, taxation and financial administration of state and local government, with emphasis on problems of current interest. Special attention given to research methods, as well as financial relations between various levels of government.

- 321 Money (3)**
Prerequisite: Economics 220. Demand for money; determination of interest rates, prices and income; decision-making under conditions of uncertainty; term structure and interest rates. Other topics of mutual interest.
- 330 International Economic Analysis: Trade (3)**
Prerequisite: Economics 51. The theory of international trade, the theory of commercial policy, economic integration and economic development. Emphasis is on the theoretical framework of analysis.
- 331 International Economic Analysis: Finance (3)**
Prerequisite: Economics 50. The balance of payments, the theory of foreign exchange, monetary standards and international liquidity. Emphasis is on the payments and adjustment mechanism, international monetary institutions and alternative monetary systems.
- 338 Comparative Economic Systems (3)**
Prerequisite: Economics 50 and Economics 51. Comparative study of economic organization, growth and welfare in different national economies such as the United States, the Soviet Union and France.
- 339 The Soviet Economy (3)**
Prerequisite: Economics 50 and Economics 51. Intensive analysis of the Soviet economy as a case study in central planning. Growth and development of the Soviet economy in historical perspective, and prospects for future evolution and structural change.
- 340 The Development of Industrial Economies (3)**
An examination of economic growth hypotheses in the context of the experience of high-income countries. Analysis of the factors affecting economic growth; labor, capital and technology.
- 341 The Development of Less-Developed Economies (3)**
Application of the theory of economic growth to developing countries. Emphasis
- on problems of capital formation, education and economic relations with other countries.
- 350 Special Readings (Credit arranged)**
Prerequisite: Consent of instructor. Unscheduled, independent directed readings on topics mutually acceptable to student and instructor.
- 351 Mathematical Economics (3)**
Prerequisites: Economics 251 and Mathematics 101. Introduction to the development and use of mathematical models in economics. Decision and game theory. Selected topics in mathematical economics.
- 355 Business and Government (3) (Same as Political Science 345)**
Prerequisite: Economics 51. Relations between business firms and government at all levels. Questions of regulation, public ownership, guidelines and competition considered.
- 356 Industrial Organization (3)**
Prerequisite: Economics 51. Analysis of the economic factors influencing industrial structure and the conduct and performance associated with various market structures.
- 364 Manpower Policies (3)**
Prerequisite: Economics 51. Analysis of the allocation of human resources with emphasis on the economic theory of labor markets in both the short and the long run. Discussion of the operation of the labor market in specific occupations.
- 365 Economic Statistics and Econometrics (3)**
Prerequisites: Economics 50 and 51 and Statistics 31. Mathematics 80 or 101 recommended. Application of statistical techniques to economic research problems.
- 366 Econometrics (3)**
Prerequisites: Economics 365. Continuation of Economics 365.
- 368 Analysis of Business Conditions (3) (Same as Business 368)**
Prerequisite: Economics 220. Discussion of factors affecting economic conditions,

- short-term fluctuations in business activity and plans and policies for economic stabilization. Emphasis on problems and techniques of forecasting aggregate and industry demand.
- 370 Economics of Location (3)**
Prerequisite: Economics 51. An analysis of the location of economic activity and the relationships that exist between regional economics.
- 371 Issues in Urban Economics (3)**
Prerequisite: Economics 50. Problems of public policy in the city as it relates to education, housing, transportation, recreation and their financing. Recent government policies concerning the city and its surrounding areas will be emphasized.
- 380 History of Economic Thought (3)**
Prerequisites: Economics 50 and Economics 51. The evolution of economic thought from the ancients through post-Keynesian theory.
- 401 Macroeconomic Analysis (3)**
Prerequisite: Economics 250 or equivalent. Aggregate economic theory, including analysis of the determinants of income, output, employment and prices. Employment and price-level effects of consumer and investment demand, the money supply and interest rates, and government policies.
- 402 Microeconomic Analysis (3)**
Prerequisite: Economics 251 or equivalent. A rigorous, basic survey of microeconomic comparative statics. Detailed examination of demand and supply, product and factor markets. Partial equilibrium in competitive, imperfectly competitive and monopolistic markets.
- 403 Research Methods (3)**
Prerequisites: Economics 401 and Economics 365 or equivalent. A study of data sources, survey techniques, organizing research problems, and application of quantitative and qualitative tools of analysis to applied economics problems.
- 420 Advanced Topics in Economic Structure, Policy and Planning (3)**
- Prerequisite: Economics 401 and Economics 365 or equivalent. An advanced research seminar on various topics in the application of economic analysis to public and private policy questions. Topics covered will include economic development and planning, comparative economic systems, program budgeting and other planning and decision-making techniques.
- 430 Advanced Topics in International Economics (3)**
Prerequisite: Economics 401. Recent literature in the pure theory of international trade, commercial policy, economic integration, trade and economic development, balance of payments adjustment and international liquidity. Empirical testing and verification of salient theoretical concepts. Independent research on selected problems.
- 470 Advanced Topics in Urban Economics (3)**
Prerequisite: Economics 401 or equivalent. Theoretical and empirical analysis of the economics of location and transportation. Economic base studies, regional input-output analysis, economics of agglomeration, manpower problems and other relevant topics. Emphasis on urban community and region.
- 491 Research II (3 or credit arranged)**
Prerequisite: Candidacy for the M.A. degree in economics. Directed research in the student's major field of interest under the supervision of a member of the graduate staff.
- 491 Research II (3 or credit arranged)**
Continuation of Economics 490.
- EDUCATION**
Elementary Education
Prerequisites may be waived by consent of department.
Elementary Education
- 325 Teaching Reading in the Elementary School (3)**
Prerequisite: Education 140, A405 and at least junior or graduate standing.

- Methods and materials of improving word perception, vocabulary, comprehension and interests in independent reading.
- 327 **Teaching Reading in the Inner City (3)**
Prerequisite: Education 140 and at least senior or graduate standing. A systematic study of the problems of teaching reading and related language arts in ghetto schools. Attention is given to the ways in which the selection of materials and methodology of teaching reading to inner city children is influenced by their physical and psychological needs, their experience backgrounds, their spoken language patterns, their cultural heritage and the sociology of their environment.
- 340 **Selection and Utilization of Educational Media (3)**
Introduction to the selection, use and evaluation of audio-visual materials and equipment including films, slides, transparencies, projectors, globes, charts, maps, bulletin boards, plus programmed materials, information retrieval systems and instructional television.
- 350 **Elementary School Curriculum (3)**
Prerequisite: Education 140. Study of modern education with regard to objectives, content, methods in elementary school curriculum.
- 369 **The Analysis and Correction of Reading Problems in the Classroom (3)**
Prerequisite: 325, 365 or equivalent. Causes of reading difficulties, procedures that may be used to analyze and correct in the group setting. BURNETT, RODENBORN
- 372 **Field Study in Elementary Education (1-3)**
- Early Childhood Education**
- 315 **Principles of Early Childhood Education (3)**
Prerequisite: Education 202 and Education 302. A study of values and basic principles underlying good schools for young children. Intensive examination of planning daily programs, organizing the learning environment, developing the curriculum and units of work. An investigation of good learning situations for preschool and primary children.
- 316 **Creative Experiences for Young Children (3)**
Prerequisite: Education 315 and completion of humanities requirements in general education. A study of and experiences with materials, techniques and resources for promoting effective cognitive and motor development through the use of art media, songs and rhythms, play and creative dramatics.
- 317 **Exploring the Physical World with Young Children (3)**
Prerequisite: Education 315 and completion of science requirements in general education. A study of and experiences with materials, techniques and resources for broadening the child's awareness and understanding of science.
- 318 **Exploring the Social World with Young Children (3)**
Prerequisite: Education 315 and completion of social science requirements in general education. A study of and experiences with materials, techniques and resources for furthering the child's mastery of the skills of communication; his understanding of people, social roles, society and various cultures; his ability to develop satisfying relationships with peers and adults.
- Special Education**
- 311 **Introduction to Mental Retardation (3)**
Prerequisite: Education 101, Education 313, and admission to the School of Education. An introductory course dealing with the characteristics, classification and causes of the mentally retarded.
- 312 **Speech and Language Problems of the Mentally Retarded (3)**
Study of the problems associated with speech and language development and the techniques employed by classroom teachers to lessen these problems for children. Required for all majors in Special Education.

Administration, Philosophy and Secondary Education

Prerequisites may be waived by consent of department.

- 320 **Comparative Education (3)**
A comparative study of representative systems of education in South America, Europe and Asia in contrast with the American System.
- 322 **History of American Education (3)**
Prerequisite: A course in American history or consent of instructor. A comprehensive study of development of American education. Stresses American and other educational ideas, educational theory, American school system and social and intellectual forces affecting American education.
- 352 **Secondary School Curriculum (3)**
Prerequisite: Education 163. Sources, scope and organization of the curriculum, modern trends and methods of investigation.
- 365 **Problems of Teaching Reading in Secondary Schools (3)**
Prerequisite: Education 101. Methods and materials for improving reading in secondary school classes, including content fields.
- 370 **Field Study in Secondary Education (credit arranged)**
Identification of specific problems in the area of secondary education. Course is conducted as a field study in the public schools. A maximum of eight credit hours may be applied toward an advanced degree contingent upon adviser approval.
- 371 **Preparation of Materials for Visual Education (3)**
For classroom teachers. Evaluation of visual education procedures and classroom instruction, including the preparation of visual education materials. (Alternating years).
- 376 **Instructional Television and Other Audio-Visual Media (3)**
Prerequisite: Consent of instructor. GREER

Behavioral Studies and Research

Prerequisites may be waived by consent of department.

- 302 **The Psychology of Teaching and Learning (3)**
Prerequisite: Education 101, Psychology 270 or 271, and admission to the School of Education. Application of the principles of psychology to an understanding of the dynamics of teaching behavior and learning behavior. Involves both theoretical and practical approaches to analysis of the learning environment of the school. Required of all who are preparing to teach.
- 310 **Interpretation of Educational Tests and Measurements (3)**
A study of the principles of psychometrics with emphasis upon the classroom interpretation of group tests of intelligence and achievement. Required of all majors in Special Education.
- 313 **The Psychology of Exceptional Children (3) (Same as Psychology 313)**
Prerequisite: Psychology 270. A study of the unique psychological problems of children who deviate from the normal. Required of all majors in Special Education.
- 331 **Classroom Measurement and Evaluation I (3)**
Tests and measurements for classroom teachers. Basic measurement principles; test planning; construction and use of selection type tests, supply type tests and performance tests; item analysis procedures; methods of summarizing test scores, determining derived scores and norms; and pupil evaluation.
- 360 **Principles and Procedures for Student Personnel Work (3)**
Student personnel work in educational institutions, objectives of student personnel work, certain pertinent techniques.
- 362 **Occupational and Educational Information (3)**
Nature, use of occupational and educational information. Characteristics, requirements of occupations and training opportunities.

- 399 Graduate Institute (credit arranged)
Prerequisite: Consent of instructor.

(A) Educational Psychology**A400 Problems (credit arranged)**

- A405 The Psychology of Education (3)
An advanced course covering the entire field of educational psychology.
WIENTGE

- A407 Psychology of the Elementary School Child (3)
The application of educational psychology to problems of teaching in the elementary school. T. JORDAN

- A408 The Psychology of Adolescence (3)
A critical psychological analysis of studies and investigation of the various aspects of adolescence.

A410 Seminar (credit arranged)

- A432 Psychology of Exceptional Children (3)
An in-depth analysis of the unique psychological problems of exceptional children and youth. Current psychological theories and research emphasized.

- A433 Education of the Mentally Retarded (3)
A study of the psychological aspects of mental retardation with regard to etiology, intellectual capabilities, characteristics, personality structure. Application to learning theories with emphasis upon curricular approaches and materials. Administrative organization and structure for provision of services. CEGELKA

(B) History and Philosophy of Education**B400 Problems (Credit arranged)**

- B471 Philosophy of Education (3)
A study of the fundamentals of education in the light of modern science and philosophy. WEINSTOCK

- B472 Analysis of Educational Issues (3)
Prerequisite: A course in philosophy of education or a course in history of education, or consent of instructor. The linguistic and logical methods of

analytic philosophy are used to delineate and critically examine issues about the elementary and secondary schools. This is done in terms of the alternative criteria and grounds for the selection and rejection of the procedures, resources and goals that guide school policies and practice. WEINSTOCK

- B475 History of Western Education (3)
A course designed to survey the educational development of western civilization from approximately the eighth century B.C. until the present. Salient educational theory and practice will be considered in their appropriate social context. TRAVERS

(C) Educational Administration**C400 Problems (credit arranged)**

- C401 Extracurricular Activities (3)
Activities related to the extracurricular program of secondary schools will be studied in depth. Analysis of appropriate activities will include the nature and purposes of these activities. PULLEY

- C406 Secondary School Administration (3)
Specialized course in secondary school administration for school administrators, supervisors, teachers. PULLEY, FAZZARO.

- C408 Elementary School Administration (3)
Specialized course in elementary school administration for school administrators, supervisors, teachers. MORRIS

C410 Seminar (credit arranged)

- C411 Theory and Organizational Development in Educational Administration (3)
Course designed to examine the theory and organizational development in the area of Educational Administration. A comprehensive examination of the work of scholars in the field will provide an insight into practical functions of theory. FAZZARO

- C414 Foundations of School Administration (3)
Emphasis on processes common to all phases of educational administration. Conceptual framework for administration

of education, decision-making and organizational theory.

- C416 School Buildings and Sites (3)
Course is designed to acquaint the administrator with methods and procedures for projecting future building and facility needs of a public school district and for supervising actual planning of facility construction. Maximizing utilization of current facilities will be studied in detail. FAZZARO

- C418 Legal Aspects of Educational Administration (3)
Principles of law as derived from court decisions; statutory and constitutional provisions affecting education. Legal status (powers and responsibilities) of school board members, superintendents, principals, teachers and pupils. FAZZARO

- C419 State and Federal Financing of Public Education (3)
Economic implications of public education. Determination of policy and practice in financing of public schools by local, state and federal agencies. Developing principles of adequate tax programs and designing systems of state support of public education. BARNES

- C420 Administration of Professional Personnel (3)
Problems of procurement, employment, induction, in-service development, salary, negotiation and welfare policies influencing professional personnel of schools. PULLEY

- C422 Leadership in Educational Administration (3)
Course is designed to acquaint the administrator with the factors of groups and interpersonal relationships directly affecting him in his job performance. The consequences of various types of group relationships upon the institution will be studied in detail. The administrator will study various rationales for and methods of improving interpersonal relationship within his institution. FAZZARO

- C441 Principles of Public School Finance in Missouri (3)
Course is designed to analyze and study critical areas of public school finance at the local and state levels, highlighting the role of such factors as legislative procedures, principles of local and state support, budgeting and accounting procedures, assessment of property, etc. BARNES

- C452 Problems in School Public Relations (3)
Principles of good public school relations, unique public functions of various school and community groups. Techniques for conducting school public relations. PULLEY

(D) Secondary Education**D400 Problems (credit arranged)**

- D402 Supervision of Clinical Experiences in Teacher Education (3)
Prerequisite: Teaching experience and consent of instructor. A consideration of the clinical phase of the teacher education program, with special emphasis on student teaching. Examination of role responsibilities and supervisory practices. Study of professional literature for research findings, theoretical formulations and recent developments in the field. OLSEN

D410 Seminar (credit arranged)

- D415 Secondary School Supervision (3)
Methods of improving instruction in junior, senior high schools. TURNER

- D430 The Junior High School (3)
Survey of the progress of junior high school, including study of more important problems of organization, administration. STARR

- D440 The Improvement of Secondary School Teaching (3)
For secondary school teachers, principals, superintendents with considerable training in education and experience in teaching. Recent developments in secondary school teaching. STARR

D445 The Secondary School Curriculum (3)
For secondary school principals, teachers, teachers, superintendents. Present methods in curricular change, methods of curricular investigation. GARD, TURNER

D446 Curriculum Construction for Secondary Schools (3)
Prerequisite: D445 or consent of instructor. Designed for those engaged in curriculum revision work and construction of new secondary school courses. TURNER

D450 Problems of Teaching English in the Secondary School (3)
A review of recent developments in the teaching of secondary English. Special attention is given to research involving instructional problems in urban and suburban schools. The course is designed for teachers, department heads and supervisors in secondary English programs. GARD

D470 In-Service Course in Secondary Education (3)
This course is designed to operate with an individual school district and is related to problems of secondary education viewed from the standpoint of that specific district. This course is specially tailored to a particular situation.

(E) Elementary Education

E350 Elementary School Curriculum (3)
Survey methods of modern educational thought with regard to objectives, content, methods in elementary school curriculum. WALSH, RAMSEY

E366 Problems of Teaching the Language Arts (3)
Procedures used in teaching integrated language arts in elementary schools. D. MILLER

E367 Problems of Teaching Arithmetic in the Elementary School (3)
A study of the mathematics program in the elementary school from the viewpoint of goals, content, techniques, and evaluation. REA

E368 Problems of Teaching Social Studies in the Elementary School (3)
A classroom-oriented study of curricular and instructional problems encountered in social studies. Emphasis is placed upon development of materials, techniques, and resources. WALSH, WATSON

E400 Problems (credit arranged)
Selected problems to meet the needs of individual students.

E402 Supervision of Clinical Experiences in Teacher Education (3)
Prerequisite: Teaching experience and consent of instructor. A consideration of the clinical phase of the teacher education program, with special emphasis on student teaching. Examination of role responsibilities and supervisory practices. Study of professional literature for research findings, theoretical formulations, and recent developments in the field. OLSEN, WOOD

E404 Elementary School Supervision (3)
Organized to study such problems in field of supervision as will meet needs of superintendents, principals, special supervisors. REA, MORRIS, WALSH

E406 Curriculum Construction in Elementary Schools (3)
A study of the elementary curriculum with regard to selection of objectives and content and to provisions for curricular change. REA, MORRIS, WALSH

E410 Seminar (credit arranged)

E425 Problems and Research in Teaching Elementary School Reading (3)
Prerequisite: Education 325 or equivalent. A systematic study of research as it focuses on the problems of teaching reading in the elementary school. Attention is given to innovations in the field. BURNETT, RAMSEY, RODENBORN

E450 Problems and Research in Elementary School Language Arts (3)
Prerequisite: G431, E366 and six hours of English. A systematic study of research in teaching speaking, listening, written composition, handwriting, spelling and linguistics as it focuses on the

problems of teaching these skills in the elementary school. Attention is given to innovations in the field. MILLER

E451 Problems and Research in Teaching Elementary School Science (3)
Prerequisite: Eight hours of science, Education 151 and A405. A thorough examination of research related to elementary school science instruction with particular emphasis on innovative programs. Includes methods of investigation and techniques for interpreting the professional literature. TROJCAK

E452 Problems and Research in Teaching Elementary School Social Studies (3)
Prerequisite: Education E368. An advanced study of pedagogical problems germane to social studies education with particular emphasis on application of research findings to the solution of classroom problems. WALSH

E453 Problems and Research in Teaching Elementary School Mathematics (3)
Prerequisite: Education E367. A thorough examination of research related to recurrent problems in elementary school mathematics instruction, as well as current problems arising within modern programs. Includes methodology appropriate to investigation of such problems and techniques for assessment of the literature. REA

E466 Children's Literature I: Survey and Analysis (3)
A survey of children's literature published in the last ten years. Special emphasis will be placed on the relationship between children's literature and contemporary issues of society. Students will experience the materials themselves rather than reading *about* books. In addition, students will begin to study the literary elements that makes literature interesting and meaningful for children. MILLER

E467 Children's Literature II: Selection and Functions (3)
Prerequisite: Education E466. A continuation of E466. The study of the literary elements that make literature interesting and meaningful for children will be completed. Further emphasis will

focus on the application of trade books for children as resources in school curricula planning. MILLER

E469 Clinical Diagnosis and Treatment of Reading Disabilities (3)
Prerequisite: A graduate course in reading and in measurement or statistics. Etiology of specific reading disability; procedures that are used to diagnose and treat in the clinical setting.

E470 Foundations of Preschool Education (3)
Prerequisite: A course in child psychology or equivalent. A study of the various types of Early Childhood programs and the philosophy upon which they are based. Attention will also be directed to the implementation of such programs, problems of parent involvement and the social environment of the children.

E479 Clinical Methods in Child Study I (3)
Prerequisite: Education E469 and A303. Clinical experience in diagnosing learning problems, especially reading disability, in school children. BURNETT, RODENBORN

E480 Development and Organization of Urban School Systems (3)
An examination and analysis of the development and existing conditions affecting urban education, with emphasis on current efforts to bring about quality education in urban areas. A review of current projects and research as well as the affect of these projects upon the school systems would be included.

E489 Clinical Methods in Child Study II (3)
Prerequisite: Education E479. Clinical experience in applying remedial procedures to school children with learning problems, especially reading disability. BURNETT, RODENBORN

E490 Introduction to Emotional Disturbances (3)
Prerequisite: Education A432 (may be taken concurrently). An advanced study of the pedagogical and sociological problems germane to emotional disturbance with particular emphasis on the application of current research findings to the solutions of these problems.

E492 Education of Emotionally Disturbed Children (3)
Prerequisite: Education E490 (may be taken concurrently). A systematic study of modern educational practices for emotionally disturbed children. Methods and materials for educating emotionally disturbed children are stressed.

E496 Practicum in Special Education (3-6)
Prerequisite: Two courses in area of concentration. A supervised internship in educating exceptional children in a school setting or other appropriate site.

(G) Guidance and Counseling

G401 Principles and Procedures of Student Personnel Work (3)
Student personnel work in educational institutions. Objectives of student personnel work, certain pertinent techniques. DUSTIN, GEORGE, MOWRER

G400 Problems (credit arranged)

G404 Individual Inventory (3)
Interpretation of educational, psychological test data and data in personnel records; emphasizes use in counseling. TOLSMA

G406 Mental Hygiene (3)
Psychology of mental health. Emphasizes normal personality, improved self-management. RICHEY, WIENTGE, RHINE

G407 Counseling Methods (3)
Counseling as a professional field; process of counseling; counseling for educational, occupational, social, personal adjustment. DUSTIN, MOWRER MOWRER

G408 Occupational and Educational Information (3)
Nature and use of occupational and educational information. Characteristics and requirements of occupations and training opportunities. Process of vocational choice. KUZNIAR, SMITH

G409 Vocational Choice Theory and Applications (3)

Emphasis on current theories of vocational development and their application in practice. Includes evaluation of interest, aptitude and ability tests significantly related to vocational development. WIENTGE, TOLSMA

G410 Seminar (credit arranged)

G412 Group Procedures in Counseling (3)
Emphasis on a survey of theory and research in group structure and processes. Students are expected to participate in an intensive group experience and conduct a group themselves under the instructor's supervision. KUZNIAR

G415 Guidance Practicum (3)
Prerequisite: Consent of instructor. Supervised practice in counseling. STAFF STAFF.

G416 Guidance Practicum II (3)
Prerequisite: Education G415 and/or consent of instructor. Supervised practice in counseling. STAFF

G422 Internship in Guidance and Counseling (3-6)
Prerequisite: Consent of instructor. Supervised practice in counseling, usually in a school setting. STAFF

G427 Educational Statistics (3)
Statistical methods for teachers, supervisors, superintendents and beginning graduate students. KLEIN, MARSHALL

G430 Research Design for Teachers and Counselors (3)
A primarily non-quantitative course surveying the various techniques and strategies available to the educational researcher for the design and execution of research, as well as for the evaluation of research carried out by others. KLEIN, T. JORDAN

G431 Classroom Measurement and Evaluation II (3)
Prerequisite: Education 331 or equivalent is strongly recommended. Descriptive statistical procedures, norms and correlations; reliability, error or measurement and validity; measurement of aptitude, achievement, interests and

attitudes and personal-social adjustment. KLEIN.

G432 Educational and Psychological Measurement (3)
Prerequisite: Education G427. General theory of measurement; interpreting test data; derived scores; theory of psychological tests; reliability and validity; measurement of achievement and aptitude, interests and attitudes and personal-social adjustment. KLEIN

G433 Individual Intelligence Testing (3)
Prerequisite: A course in group testing. Study of the Stanford-Binet Scale and other individual tests of intelligence. Practice in administering and interpreting the tests. GMUER

G441 Student Personnel Work in Higher Education (3)
A survey course in student personnel administration with an emphasis on understanding the college student and learning ways to meet both his academic and non-academic needs.

499 Graduate Institute (credit arranged)
Prerequisite: Consent of instructor

ENGLISH

Prerequisites may be waived by consent of department.

315 Literary Criticism (3)
Historical survey of the principles of literary criticism from Plato to the present.

322 Transformational Syntax (3)
Prerequisite: English 221 or consent of instructor. A detailed study of Modern English sentence structure in terms of current theories of linguistic description. Transformational theory, individual transformations, case grammar, language universals and applications to the teaching of English.

324 Chaucer (3)
The course concentrates on the poetry of Geoffrey Chaucer including the *Canterbury Tales*, early poetic works, and the *Troilus and Cressida*. All readings are in the original Middle English.

325 Medieval English Literature (3)
A survey of Old and Middle English literature from *Beowulf* to Malory's *Morte D'Arthur*, exclusive of Chaucer. All works are read in modern English translations.

326 The Medieval Drama (3)
The development of medieval drama from its liturgical origins to the English mystery cycles and morality plays, ending with the early pre-Elizabethan interludes.

332 Tudor Poetry (3)
Spenser, Sidney, the sonneteers, and other non-dramatic poets of the sixteenth century. The development of poetic theory.

337 Shakespeare: Tragedies and Romances (3)
The development of Shakespeare's concept of tragedy and tragicomedy from *Titus Andronicus* to *Tempest*. The plays will be related to the social and literary milieu of the period.

338 Shakespeare: Comedies and Histories (3)
Shakespeare's early work for the theater with some attention to the sonnets and longer poems. A historical background for a study of all the plays, including discussions of Elizabethan society, the world of the stage and Shakespeare's biography.

339 Tudor and Stuart Drama (3)
A survey of the dramatic writings of the period from the interludes of John Heywood to the closing of the theaters in 1642, with particular attention to the plays of Marlowe, Jonson, Webster and Ford. Though Shakespeare will not be studied in this course, connections between his works and those of his contemporaries will be discussed.

341 English Renaissance Prose (3)
The full variety of sixteenth and seventeenth-century prose. Prose fiction, the essay, the diary and philosophical and religious writing. Analysis of both thematic and stylistic developments.

342 Early Seventeenth-Century Poetry (3)
Non-dramatic poetry from the accession of James I to the Restoration, exclusive of Milton.

ENGLISH

- 345 **Milton (3)**
All the minor poems and the three longer poems with some attention to the major prose. Milton and his relation to the politics, theology and literature of the seventeenth century.
- 346 **Restoration and Eighteenth Century Drama (3)**
The principal tragedies and comedies from Dryden to Sheridan, including the plays of Congreve, Farquhar, Rowe, Gay, Fielding, Goldsmith, among others.
- 352 **Age of Dryden and Pope (3)**
The beginnings of English neo-classic literature in the Restoration and its development through the first half of the eighteenth century, focusing on Dryden, Swift and Pope.
- 353 **Age of Johnson (3)**
The breakdown of the neo-classic spirit and the introduction of the "new" poetry and novel. Consideration of Fielding, Johnson, Thomson, Young, Goldsmith, Sheridan and others.
- 364 **The Eighteenth-Century English Novel (3)**
The origins and early development of the English novel, from Defoe to Jane Austen.
- 365 **The Nineteenth-Century English Novel (3)**
The later development of the English novel, from Scott to Conrad.
- 368 **Early Romantic Poetry and Prose (3)**
The English Romantic Movement with special emphasis on the early writers—Blake, Wordsworth and Coleridge. Additional readings in Lamb, Hazlitt, Scott and selected minor writers.
- 369 **Later Romantic Poetry and Prose (3)**
The English Romantic Movement with special emphasis on the later writers—Byron, Shelley and Keats. Additional readings in DeQuincey, Hunt, Jane Austen and selected minor writers.
- 371 **Prose and Poetry of the Victorian Period (3)**
Critical reading of selections from Tennyson, Browning, Arnold and others, in addition to selections from the major prose writers.
- 372 **The Later Nineteenth Century (3)**
Poetry, drama and fiction of the period between 1870 and the First World War. Hardy, Hopkins, Conrad, Shaw, Wilde, Yeats and others.
- 373 **Major American Writers I (3)**
American literature of the nineteenth and twentieth centuries centering around such figures as Emerson, Hawthorne, Melville, Poe and Whitman.
- 374 **Major American Writers II (3)**
American literature of the late nineteenth and twentieth centuries centering around such figures as James, Dickinson, Crane, Jeffers, Faulkner and others.
- 375 **American Fiction to World War I (3)**
Development of the novel and short story in America through World War I. Emphasis is upon fiction representative of Romanticism, Realism and Naturalism.
- 376 **American Fiction After World War I (3)**
Development of the novel and short story in America since World War I.
- 383 **Modern Fiction (3)**
Critical reading and analysis of selected British and American fiction of the twentieth century.
- 384 **Modern Poetry (3)**
Critical reading and analysis of selected British and American poetry of the twentieth century.
- 385 **Modern Drama (3)**
British, American and European drama of the last one hundred years: the well-made play, the problem play, verse drama, new definitions of tragedy, the angry theater, theater of the absurd.

FRENCH

Prerequisites may be waived by consent of department.

- 331 **Medieval and Renaissance Literature (3)**
Prerequisite: French 201 or 202. Critical reading and analysis of representative works of the period in modernized French versions.

FRENCH

GERMAN

Prerequisites may be waived by consent of department.

- 341 **Seventeenth Century French Theatre (3)**
Prerequisite: French 201 or 202. Critical reading of selected plays by Corneille, Moliere, Racine and other dramatists of the seventeenth century.
- 342 **Seventeenth Century French Prose and Poetry (3)**
Prerequisite: French 201 or 202. A critical study of representative poets and prose writers including novelists and philosophers.
- 353 **Eighteenth Century French Literature (3)**
Prerequisite: French 201 or 202. The philosophic movement. Selected works from Montesquieu, Voltaire, Diderot and Rousseau.
- 354 **Eighteenth Century French Theatre and Novel (3)**
Prerequisite: French 201 or 202. Critical readings and discussion of representative novels and plays of the eighteenth century.
- 361 **Nineteenth Century French Poetry and Theatre (3)**
Prerequisite: French 201 or 202. A study of literary movements and trends in the 19th century through the critical reading of selected works by the major poets and dramatists.
- 362 **Nineteenth Century French Novel (3)**
Prerequisite: French 201 or 202. Critical reading of selected works by the major novelists of the period. Discussion of realism and naturalism.
- 371 **Twentieth Century French Novel (3)**
Prerequisite: French 201 or 202. A study of selected works by the principal novelists of the modern period.
- 372 **Twentieth Century French Theatre and Poetry (3)**
Prerequisite: French 201 or 202. Critical reading and discussion of selected works by the leading dramatists and poets of the modern period.
- 399 **French Seminar (3)**
Prerequisite: Senior standing. Required of all French majors. Subject to be announced each year by the instructor in charge of the seminar.
- 308 **Advanced Composition and Conversation (3)**
Prerequisite: German 208 or equivalent. Continuation of German 208. Designed to develop accuracy and fluency of expression in German.
- 315 **German Classicism and Romanticism (3)**
Prerequisites: German 201 and one other 200 level course in German. Representative writers from the classical and romantic periods of German literature, including works by Lessing, Goethe, Kleist and E.T.A. Hoffman.
- 320 **German Realism and Naturalism (3)**
Prerequisites: German 201 and one other 200 level course in German. Representative writers of realism and naturalism in German literature, including works of Grillparzer, Hebbel, Stifter, Keller and Hauptmann.
- 345 **Modern German Literature (3)**
Prerequisites: German 201 and one other 200 level course in German. Representative works from modern German literature.
- 397 **Survey of German Literature Part I (3)**
Prerequisite: One other German literature course on the 300 level. Special emphasis on the summary and synthesis of trends and characteristics of major periods in German literature considered in the general context of European culture.
- 398 **Survey of German Literature II (3)**
Prerequisite: One other German literature course on the 300 level. Special emphasis on the summary and synthesis of trends and characteristics of major periods in German literature considered in the general context of European culture.
- 399 **German Seminar (3)**
Prerequisites: At least senior or graduate standing and two 300-level courses. Topic to be selected by instructor.

HISTORY

Prerequisites may be waived by consent of department.

- 310 **History of Spain (3)**
Prerequisites: History 10 and 200 or consent of department. A survey of Spanish history from the fifteenth century to the present, emphasizing its period of empirical greatness and examining the effects of empire on national development.
- 311 **Seminar in Minority Heritage (3)**
Lectures and readings on minority history and experience in American Society.
- 312 **Jewish History (3)**
Prerequisite: None. Lectures, readings, and discussions on the history of the Jewish people, from ancient times to the present.
- 315 **Twentieth Century Southeast Asia (3)**
Prerequisite: At least junior or graduate standing or consent of instructor. Emphasis on the decline of colonialism, the wars of national liberation, and the new nations of Southeast Asia today.
- 318 **Modern China: 1800 to Present (3)**
Prerequisite: At least junior or graduate standing or consent of instructor. The economic, social and political development of modern China.
- 319 **Modern Japan: 1850 to Present (3)**
Prerequisite: At least junior or graduate standing or consent of instructor. The economic, social and political development of modern Japan.
- 321 **Medieval England (3)**
Prerequisite: At least junior or graduate standing or consent of department. A brief summary of the Anglo-Saxon heritage and the impact of the Norman Conquest, followed by an investigation of the institutional, social and legal evolution of the Realm of England. English development will be viewed in its European context.
- 322 **Yorkist and Tudor England (3)**
Prerequisites: History 10 and 200 or consent of department. The turmoil over the monarchy and the consolidation of the Tudor dynasty. A study of the English reformation and the political and economic changes of the sixteenth century.
- 323 **Stuart England (3)**
Prerequisite: At least junior or graduate standing or consent of department. A study of the English revolutions, religious controversy and the rise of Parliamentary power, the social and economic changes of the century, and the role played by England in the European struggles of the period.
- 324 **Hanoverian England (3)**
Prerequisite: At least junior or graduate standing or consent of department. A study of English politics, economics and culture during the Hanoverian period. (1714-1837).
- 325 **Victorian England (3)**
Prerequisite: At least junior or graduate standing or consent of department. An economic, political and social study of Great Britain during the twentieth century.
- 326 **Modern Britain (3)**
Prerequisite: At least junior or graduate standing or consent of department.
- 328 **Modern France: The Nineteenth Century (3)**
Prerequisites: History 10 and 200 or consent of department. The search for a stable form of government in attempts with monarchy, empire, and republic; political, institutional, socio-economic, and diplomatic problems of this search.
- 329 **Modern France: The Twentieth Century (3)**
Prerequisites: History 10 and 200 or consent of department. The problems of maintaining the republic and great power status in the twentieth century; political, institutional, socio-economic, and diplomatic aspects of this problem.
- 330 **Europe in the Seventeenth Century (3)**
Prerequisites: History 10 and 200 or consent of department. The growth of the modern state system; the origins of modern science.
- 331 **Europe in the Eighteenth Century (3)**
Prerequisites: History 10 and 200 or

- consent of department. The Old Regime, the Enlightenment, the French Revolution and Napoleon.
- 332 **Europe in the Nineteenth Century (3)**
Prerequisites: History 10 and 200 or consent of department. The major political, economic and intellectual developments in Europe from the Congress of Vienna to the outbreak of World War I.
- 333 **Europe in the Twentieth Century (3)**
Prerequisites: History 10 and 200 or consent of department. The impact of World Wars I and II; the search for equilibrium.
- 334 **Europe in the Early Middle Ages (3)**
Prerequisites: History 10 and 200 or consent of department. Fall of the Roman Empire, the Byzantine Empire and reconstruction in the West.
- 335 **Europe in the High and Late Middle Ages (3)**
Prerequisites: History 10 and 200 or consent of department. Continuation of History 334 up to the Renaissance.
- 336 **The Ancient Near East and Greece (3)**
Prerequisites: History 10 and 200 or consent of department. A cultural survey of the civilizations of the Near East and Greece up to the fourth century B.C., with emphasis on social and economic trends.
- 337 **The Hellenistic World and the Roman Empire (3)**
Prerequisites: History 10 and 200 or consent of department. Major political events and social and economic survey analyzing the rise, decline and fall of the Roman Empire.
- 338 **The Age of the Renaissance (3)**
Prerequisites: History 10 and 200 or consent of department. The Italian and Northern Renaissance as a distinct age; political, socio-economic, intellectual, religious and artistic movements attending the decline of medieval society and the transition to the early modern period.
- 339 **The Age of Reformation (3)**
Prerequisites: History 10 and 200 or
- consent of department. Religious, intellectual, political and socio-economic developments of the sixteenth century.
- 340 **History of Science (3)**
Prerequisite: One laboratory science and six hours of history. The origins of science and scientific methodology. The interactions of science and non-science, with emphasis upon the Greeks, the Renaissance, the seventeenth century and the nineteenth century.
- 341 **Intellectual History of Russia, 1790-1920 (3) (Formerly 347)**
Prerequisites: History 10 and 200 or consent of department. Thought, culture and radicalism during the last years of the Romanov Empire, development of radical intelligentsia up to and including Lenin.
- 342 **European Intellectual History (3)**
Prerequisites: History 10 and 200 or consent of department. Main currents of European intellectual thought from the late seventeenth through the mid-nineteenth century. From Locke to Hegel.
- 343 **Intellectual History of Europe, Bentham to Freud (3)**
Study of main currents of ideas in nineteenth century Europe in conjunction with social, economic and political events of the time. Topics considered are Liberalism, Socialism, Irrationalism and Psychoanalysis. Thinkers considered are Bentham, St. Simon, J. S. Mill, Coleridge, Marx, Ruskin, R. Wagner, Schopenhauer, Nietzsche and Freud.
- 344 **European Diplomacy from 1815 to Present (3)**
Prerequisites: History 10 and 200 or consent of department. A survey of European international relations. The relationship between diplomacy and warfare, plans for collective security, the theory of "the balance of power," systems of alliances, and the domestic and ideological origins of foreign policy.
- 345 **Modern Germany: To 1917 (3)**
Prerequisites: History 10 and 200 or consent of department. The development of modern Germany. Attention will

- focus on nationalism, unification, industrialization and the coming of the Great War.
- 346 **Modern Germany: Since 1917 (3)**
Prerequisites: History 10 and 200 or consent of department. Weimar Republic, Nazi Reich and the postwar division. Attention will focus on the failure of democracy, totalitarianism and its results.
- 347 **Russia: Beginnings through Peter the Great (3)**
Prerequisites: Any two of History 10, 11, 12, 200 or consent of department. The social, economic, political and cultural development of Russia from pre-Kievan times to 1725. Includes treatment of the rise and development of Muscovite Russia and the reforms of Peter the Great.
- 348 **Russia under the Romanovs, 1700-1917 (3)**
Prerequisites: Any two of History 10, 11, 12, 200 or consent of department. The emergence of Russia as a great power, the peak of its development under Catherine II and Alexander I (1796-1825), the reform and revolutionary movements of the nineteenth century and the revolutions of 1905 and 1917.
- 349 **History of the U.S.S.R. (3)**
Prerequisites: History 10 and 200 or consent of department. Political, social, and cultural development in Russia from 1917 to the present. Major topics will include: the Revolution of 1917, stabilization of Communist power under Lenin, Stalin's "Great Change" and the organization and testing of the Communist state, post-Stalinist development.
- 350 **Special Readings (credit arranged)**
Prerequisites: Consent of instructor. Independent study through readings, reports and conferences.
- 351 **American Intellectual History (3)**
Prerequisites: Any two of History 3, 4, 230 or 240 or consent of department, American intellectual development to 1865.
- 352 **American Intellectual History (3)**
Prerequisites: Any two of History 3, 4,
- 230 or 240 or consent of department. Continuation of History 351.
- 353 **United States History: Colonial America to 1763 (3)**
Prerequisites: Any two of History 3, 4, 230 or 240 or consent of department. English background of colonization; rise of distinctive New England and Southern societies; English colonial policy to the Peace of Paris.
- 354 **United States History: Revolution and the New Nation, 1763-1815 (3)**
Prerequisites: Any two of History 3, 4, 230 or 240 or consent of department. The colonial policy of Britain; Revolution and the new nation; Hamiltonians and Jeffersonians.
- 355 **United States History: Jacksonian Democracy 1815-1848 (3)**
Prerequisites: Any two of History 3, 4, 230 or 240 or consent of department. The Era of Good Feelings; the Age of Jackson; Manifest Destiny; sectional and cultural conflict.
- 356 **United States History 1877 to 1929 (3)**
Prerequisites: Any two of History 3, 4, 230 or 240 or consent of department. Economic, social and political development of the United States 1877 to 1929.
- 357 **United States History 1929 to Present (3)**
Prerequisites: Any two of History 3, 4, 230 or 240 or consent of department. Economic, social and political development of the United States, 1929 to present.
- 358 **Civil War and Reconstruction (3)**
Prerequisites: Any two of History 3, 4, 230 or 240 or consent of department. The sectional and ideological differences leading to the American Civil War, the Civil War itself and the period of reconstruction. U.S. History 1848-1877.
- 359 **Sectionalism and Slavery (3)**
Prerequisites: Any two of History 3, 4, 230 or 240 or consent of department. The political and social developments of the ante-bellum period relating to the growth of sectionalism and the developing anti-slavery crusade.

- 360 **American Frontier History (3)**
Prerequisites: Any two of History 3, 4, 230 or 240 or consent of department. The frontier considered as a factor in the development of American institutions. Frederick Jackson Turner and his critics. The westward course of settlement; the passing of the frontier.
- 361 **Constitutional History of the U.S. to 1865 (3)**
Prerequisites: Any two of History 3, 4, 230 or 240 or consent of department. Origins and historical development of the principal institutions and ideas of the American Constitutional system, the role of the Constitution in the establishment and early growth of the nation; Constitutional issues of Hamiltonianism, Jeffersonianism, and Jacksonianism, including the role of the Supreme Court, the Constitutional issues in the Civil War.
- 362 **Constitutional History of the U.S. Since 1865 (3)**
Prerequisites: Any two of History 3, 4, 230 or 240 or consent of department. The Constitutional issues of the Reconstruction era, how they were resolved, and the implications for the future, with special emphasis upon the Fourteenth Amendment and the evolution of the due process concept and their relations with individual liberties and civil rights; the impact of industrialization and urbanization upon American constitutional thought and development; the evolving impact of the Supreme Court; historical background to current Constitutional issues.
- 363 **History of Women in the United States (3)**
Prerequisite: At least junior or graduate standing or consent of department. The development of women's economic, political, and social role in the United States with special emphasis on the 19th and 20th centuries. Women and work; women and the family; women and reform movements; women and education; feminist theorists and activists; images of women.
- 364 **Immigration in United States History (3)**
Prerequisites: Any two of History 3, 4, 230 or 240 or consent of department.
- This course explores the background of immigration, general immigration trends and distribution of patterns, ethnic communities in America, some comparisons of different immigrant groups, the immigrant's influence on the United States and the assimilation and acculturation of immigrants into American life.
- 365 **American Urban History (3)**
Prerequisites: Any two of History 3, 4, 230 or 240 or consent of department. The rise of the city, and the transformation of ideas and institutions in the American city from colonial times to the present.
- 366 **Black History, 1890-Present (3)**
Prerequisite: At least junior or graduate standing or consent of department. An intensive examination of migration patterns, the role of the Supreme Court, and protest organizations from the NAACP to the Black Panthers.
- 367 **Growth of the American Economy (3)**
Prerequisites: Any two of History 3, 4, 230 or 240 or consent of department. Economic factors in the development of American institutions, from the colonial period to the present. Emphasis is on banking, transportation, agriculture and international trade.
- 368 **Rise of Industrial America (3)**
Prerequisites: Any two of History 3, 4, 230 or 240 or consent of department. History of American business, industry and labor.
- 369 **History of the American South (3)**
Prerequisites: Any two of History 3, 4, 5, 230, or 240. Southern society and culture and the South's relationship with the nation.
- 370 **Asian-American Relations (3)**
Prerequisite: At least junior or graduate standing or consent of instructor. A study of relations between American and Asian peoples from the early years of the China traders to the present.
- 371 **American Military History (3)**
Prerequisites: Any two of History 3, 4, 5, 230 or consent of department. A study of American military institutions from

- colonial times to the present. The impact of the military upon American social, political and economic life, as well as civilian attitudes toward the services.
- 375 **History of Latin America To 1808 (3)**
Prerequisite: At least junior or graduate standing. Latin America from the Amerindian civilizations to 1808, stressing social, political, and economic institutions in the Spanish colonies.
- 376 **History of Latin America Since 1808 (3)**
Prerequisite: At least junior or graduate standing. Emphasis on the attainment of political independence, social, political and economic developments of the nineteenth century and the struggle for modernity.
- 377 **U.S. and Wars of National Liberation (3)**
Prerequisite: At least junior or graduate standing or permission of instructor. A comparative study of the American response to selected revolutionary movements in Asia, Latin America and Africa.
- 399 **Quantitative Methods in Historical Research (3)**
Prerequisite: At least junior or graduate standing or consent of department. This course deals primarily with how one can use quantitative analysis to improve the validity of generalizations and inferences one may draw from various types of historical data. A number of basic methods for analyzing social and political data will be explored, as well as the rationale for using such quantitative methods in historical research.
- 419 **Readings in East Asian History (3)**
Directed readings on selected topics and areas in East Asian history. Course may be repeated on different topics or areas.
- 430 **Readings in European History (3)**
Directed readings on selected topics and areas in European history. Course may be repeated on different topics or areas.
- 450 **Readings in American History (3)**
Directed readings on selected topics and areas in America history. Course

- may be repeated on different topics or areas.
- 460 **Readings in Latin American History (3)**
Directed readings on selected topics and areas in Latin American history. Course may be repeated on different topics or areas.
- 490 **Seminar in European History (3)**
Research and writing on selected topics in European history.
- 491 **Seminar in American History (3)**
Research and writing on selected topics in American history.
- 492 **Seminar in East Asian History (3)**
Research and writing on selected topics in East Asian history.

MATHEMATICS

A minimum grade of "C" shall be required to meet the prerequisite requirements for any course except with permission of the department.

Prerequisites may be waived by consent of department.

- 301 **Differential Equations (3)**
Prerequisite: Mathematics 250. A theoretical approach to ordinary differential equations intended for the student majoring in mathematics. Existence of solutions of linear differential equations and systems of differential equations. Credit not granted for both Math 301 and Math 302.
- 302 **Applied Mathematics I (3)**
Prerequisite: Mathematics 201. A course designed for the student who will use differential equations. Emphasis is upon methods of solutions. Linear differential equations with constant coefficients, systems of differential equations, power series. Credit not granted for both Math 301 and Math 302.
- 303 **Applied Mathematics II (3) (F)**
Prerequisite: Mathematics 301 or Mathematics 302. Topics chosen from vector analysis, Fourier series, special functions, partial differential equations, boundary value problems.

- 304 **Applied Mathematics III (3)**
Prerequisite: Mathematics 303. Complex analysis; analytic functions, Cauchy integral theorem, Taylor's theorem, Laurent expansions, calculus of residues, conformal mapping; matrices and linear algebra, manipulation of matrices, characteristic values; integral transforms, Fourier and Laplace transforms and applications.
- 310 **Advanced Calculus (3)**
Prerequisite: Mathematics 250 or consent of department. Limits, continuity and differentiability of functions of one and several variables, sequences and series, the Riemann-Stieltjes integral.
- 311 **Advanced Calculus II (3)**
Prerequisite: Mathematics 310. Continuation of Mathematics 310.
- 316 **Functions of a Complex Variable (3)**
Prerequisite: Mathematics 310. Complex numbers and their geometrical representation, point sets, analytic functions of a complex variable, complex integration, Taylor and Laurent series, residue theorem, conformal mapping.
- 320 **Mathematical Statistics I (3)**
Prerequisite: Mathematics 201. Introduction to theory of probability and statistics using concepts and methods of the calculus.
- 321 **Mathematical Statistics II (3)**
Prerequisite: Mathematics 320. Continuation of Mathematics 320. Continuous sample spaces, stochastic processes, statistical inference and statistical models.
- 322 **Programming Languages (3) (F)**
Prerequisite: Mathematics 222. Formal definition of programming languages including specification of syntax and semantics. Global properties of algorithmic languages including scope of declarations, storage allocation, grouping of statements, subroutines, and coroutines. List processing, string manipulation and simulation languages.
- 323 **Numerical Analysis I (3) (F & W)**
Prerequisite: Mathematics 201 and knowledge of Fortran. Solutions of

equations, interpolation and approximation, numerical differentiation and integration, and numerical solution of initial value problems in ordinary differential equations. Selected algorithms will be programmed for solution on computers.

- 324 **Numerical Analysis II (3) (W)**
Prerequisite: Mathematics 323. The solution of linear systems by direct and iterative methods, matrix inversion, the evaluation of determinants, and the calculation of eigenvalues and eigenvectors of matrices. Application to boundary value problems in ordinary differential equations. Introduction to the solution of partial differential equations. Selected algorithms will be programmed for solution on computers.
- 327 **The Calculus of Variations (3) (V)**
Prerequisite: Mathematics 311. Methods for optimizing functionals and their applications. The Euler-Lagrange condition, Hamilton's principle, two dimensional variational problems and Isoperimetric problems. Approximate methods for the solution of variational problems.
- 332 **Artificial Intelligence (3) (V)**
Prerequisites: Mathematics 250, Mathematics 322. Definition of heuristic versus algorithmic methods. Use of Heuristic methods in such areas as game playing, theorem proving, formula manipulation, symbolic differentiation, pattern recognition and question answering. Class and individual projects to illustrate basic concepts.
- 335 **Theory of Numbers (3)**
Prerequisite: Mathematics 250 or consent of department. Properties of the integers, multiplicative functions, congruences, primitive roots, quadratic residues.
- 340 **Introduction to Abstract Algebra I (3)**
Prerequisite: Mathematics 250 or consent of the department. Introduction to groups, rings, fields and vector spaces with emphasis on fields.
- 341 **Introduction to Abstract Algebra II (3)**
Prerequisite: Mathematics 340 or consent of the department. Continuation

- of Mathematics 340 with emphasis on linear algebra.
- 350 **Special Readings (credit arranged)**
Prerequisite: Mathematics 250 and consent of instructor.
- 358 **Mathematical Logic (3)**
Prerequisite: Mathematics 250 or Philosophy 360 or consent of department. A study of the logic of mathematics by the axiomatic method, with a development of the propositional calculus and restricted predicate calculus, emphasizing its application to the foundations of mathematics.
- 362 **Projective Geometry (3)**
Prerequisite: Mathematics 250 or consent of department. Analytic approach to the study of projective spaces. Theorems of Desargues, Pascal and Brianchon. Projective properties of conics.
- 364 **Introduction to Differential Geometry (3)**
Prerequisite: Mathematics 310. Geometry of curves and surfaces in Euclidian 3-space. Calculus on a surface. Intrinsic geometry of surfaces.
- 366 **Foundations of Geometry (3)**
Prerequisite: Mathematics 250 or consent of department. A development of portions of Euclidean geometry from a selected set of axioms, including a discussion of consistency, independence, categoricity and completeness of the axioms.
- 367 **Introduction to Non-Euclidean Geometry (3)**
Prerequisite: Mathematics 250 or consent of department. A summary of the history of the non-Euclidean geometries and a study of hyperbolic plane geometry.
- 380 **Introduction to Topology (3)**
Prerequisite: Mathematics 250 or consent of department. A study of topological spaces, including the concepts of limit, continuity, connectedness, compactness, etc. Special emphasis placed on, and examples taken from, the space of real numbers.

- 410 **Theory of Functions of a Real Variable (3)**
Prerequisite: Mathematics 310. The real number system, properties of functions of one or more real variables, mapping, theorems. Introduction to measure and integration theory.
- 448 **Topics in Algebra (3)**
Prerequisites: Mathematics 340 and 341 and consent of department. Topics selected from the theory of groups, rings, fields, algebras and other algebraic systems. May be taken more than once for credit with consent of department.

MUSIC

Prerequisites may be waived by consent of the department.

- 300 **Advanced Techniques in Music Education (1-2)**
Prerequisite: A 200-level music education course or permission of the department. Intensive study for advanced music education students and music teachers, emphasizing specialized techniques and innovative concepts. Topics to be announced. May be repeated for credit.
- 321 **Music of the Middle Ages (3)**
Prerequisite: Music 101 or consent of department. A study of music and musical thought from the beginning of Christianity to 1450. Gregorian chant, polyphonic music, the Ars Antiqua and the Ars Nova.
- 322 **Music of the Renaissance (3)**
Prerequisite: Music 101 or consent of department. A study of the theoretical and practical impact of humanism on music, musicians, and musical thought from 1450 to 1600. Sacred and secular music; the rise of an instrumental idiom.
- 323 **Music of the Baroque (3)**
Prerequisite: Music 101 or consent of department. A detailed study of musical style from 1600 to 1750. The rise of the new style, national styles in the seventeenth century and the culmination of the baroque period.
- 324 **Music of the Classic Period (3)**
Prerequisite: Music 102 or consent of department. A study of the growth of

classical style, galant and expressive styles; Mozart, Haydn and Beethoven.

- 325 **Music of the Romantic Period (3)**
Prerequisite: Music 102 or consent of department. Composers, forms and styles in nineteenth century music. The literary and social background of musical Romanticism.
- 326 **Music of the Twentieth Century (3)**
Prerequisite: Music 102 or consent of department. A detailed study of trends in modern music and of influential composers; Impressionism, serial composition, electronic music and other recent techniques.

PHILOSOPHY

Prerequisites may be waived by consent of department.

- 301 **Plato (3)**
Prerequisite: Nine hours of philosophy or consent of instructor. A study of selected Platonic dialogues.
- 302 **Aristotle (3)**
Prerequisite: Nine hours of philosophy or consent of instructor. A selective study of Aristotle's major works.
- 304 **Medieval Philosophers (3)**
Prerequisite: Nine hours of philosophy or consent of instructor. Emphasis on the works of Augustine, Aquinas and Ockham.
- 305 **The Rationalists (3)**
Prerequisite: Nine hours of philosophy or consent of instructor. An examination of the philosophies of such major figures as Descartes, Spinoza and Leibniz.
- 306 **The British Empiricists (3)**
Prerequisite: Nine hours of philosophy or consent of instructor. An examination of the philosophies of such major figures as Locke, Berkeley and Hume.
- 307 **Kant (3)**
Prerequisite: Nine hours of philosophy or consent of instructor. A systematic study of the *Critique of Pure Reason*.
- 308 **Hegel (3)**
Prerequisite: Nine hours of philosophy
- or consent of instructor. A critical study of the writings and influence of Hegel.
- 310 **American Philosophy (3)**
Prerequisite: Nine hours of philosophy or consent of instructor. A study of selected American philosophers.
- 315 **Existentialism and Phenomenology (3)**
A study of some major representatives of these schools from Kierkegaard to the present.
- 318 **Philosophy of Mind (3)**
Prerequisite: Nine hours of philosophy or consent of instructor. A study of concepts and problems in the philosophy of mind such as the identity theory, minds and machines, thinking, will, emotion, action, and intention.
- 320 **Theories of Knowledge (3)**
Prerequisite: Nine hours of philosophy or consent of instructor. An examination of concepts and problems involved in the characterization of knowledge. Specific topics will vary, but will usually include knowledge, belief, skepticism, evidence, certainty, perception, truth and necessity.
- 321 **Metaphysics (3)**
Prerequisite: Nine hours of philosophy or consent of instructor. An examination of selected metaphysical topics such as substance, universals, causality, necessity, space and time, free will, being and identity.
- 323 **Problems in Philosophical Theology (3)**
Prerequisite: Nine hours of philosophy or consent of instructor. An intensive study of problems arising out of traditional and contemporary philosophical theology.
- 325 **Recent Ethical Theory (3)**
Prerequisite: Nine hours of philosophy or consent of instructor. A study of major contributions to twentieth century ethics, including works by such writers as Moore, Dewey, Ross, Stevenson, Hare and Rawls.
- 330 **Philosophy of Language (3)**
A study of the nature and structure of language and its relationship to selected philosophical problems. Included will be

such topics as ordinary language philosophy, significant developments in twentieth century linguistics, prospects for semantic theory, and a discussion of traditional problems of meaning, reference, and synonymy.

- 335 Philosophical Issues in the Social Sciences (3)**
A detailed analysis of issues raised by the social sciences, including the logical characterization of explanations, predictions, laws and theories; types of reductionism; objectivity, values; and the empirical basis of the social sciences.

- 340 Special Topics in the Philosophy of Science (3)**
Prerequisite: Consent of instructor. An examination of a selected area or topic within the philosophy of science. Topics to be considered will be announced prior to registration and may vary from year to year. This course may be repeated for credit on approval by the department.

- 350 Special Readings (credit arranged)**
Prerequisite: Consent of instructor. Independent study through readings, reports and conferences.

- 360 Advanced Formal Logic (3)**
Prerequisite: Philosophy 160 or consent of instructor. Rigorous study of major developments in contemporary logic. Emphasis is given to theoretical problems and some attention devoted to philosophical issues arising from logic.

- 370 Significant Figures in Philosophy (3)**
Prerequisite: Nine hours of philosophy or consent of instructor. A critical study of the work of an important philosopher. The philosopher to be considered will be announced prior to registration. This course may be repeated for credit on approval by the department.

- 380 Special Topics in Philosophy (3)**
Prerequisite: Nine hours of philosophy or consent of instructor. A critical study of classical and/or contemporary contributions to a selected topic in philosophy. The topic to be considered will be announced prior to registration. This course may be repeated for credit on approval by the department.

PHYSICS

Prerequisites may be waived by consent of department.

- 301 Introduction to Mathematical Physics (3)**
Prerequisite: 16 hours of physics. A course covering mathematical techniques as applied to the equations of theoretical physics; calculus of variations, Green's functions; linear vector spaces, integral equations. Three hours lecture and one hour discussion per week.

- 305 Physical Applications of Group Theory (3)**
Prerequisite: Physics 113. Elements of group theory and group representations. Point symmetry groups and applications to the physics of crystals. The rotation group in two and three dimensions with application to atomic and nuclear spectroscopy. Three hours lecture and one hour discussion per week.

- 311 Advanced Physics Laboratory I (3)**
Prerequisite: Physics 231, 201, 221, 113, and Mathematics 122. Physics majors are introduced to the experimental techniques used in research. A student will choose and do several special problems during the semester. Six hours laboratory per week.

- 312 Advanced Physics Laboratory II (2)**
Prerequisite: Physics 231, 201, 221, 113 and Mathematics 122. Continuation of Physics 311. Six hours laboratory per week.

- 331 Introduction to Quantum Mechanics (3)**
Prerequisite: Physics 231, 221, 223, 113, 241. Elementary treatment of quantized mechanical systems, methods of Schrodinger's wave mechanics, operator techniques, and perturbation theory. Three hours lecture and one hour discussion per week.

- 333 Astrophysics I (3)**
Prerequisite: Physics 231, 221, 223, 113. Applications of basic physical principles to investigation of sun, planetary systems, stars, galaxies and interstellar matter. Three hours lecture and one hour discussion per week.

- 334 Astrophysics II (3)**
Prerequisite: Physics 333. Continuation of Physics 333. Three hours lecture and one hour discussion per week.

- 335 Atomic and Nuclear Physics (3)**
Prerequisite: Physics 331. Application of Schrodinger's equation to hydrogen-like atoms; atomic structure and spectra; nuclear masses, energy levels; alpha, beta, and gamma radiation, nuclear reactions, models of the nucleus. Three hours lecture and one hour discussion per week.

- 343 Selected Topics in Physics I (3)**
Prerequisite: Physics 113, 221, 223, 225, 231, 241 and Mathematics 304 (Mathematics 304 may be taken concurrently). Topics include special phenomena such as scattering of waves, thermal motion in gases, atmospheric disturbances, treated by methods of advanced mechanics, electromagnetism and quantum mechanics. Three hours lecture and one hour discussion per week.

- 344 Selected Topics in Physics II (3)**
Prerequisite: Physics 343. Continuation of Physics 343. Three hours lecture and one hour discussion per week.

- 351 Elementary Solid State Physics (3)**
Prerequisite: Physics 331. Theoretical and experimental aspects of solid state physics, including one-dimensional band theory of solids; electron emission from metals and semiconductors; electrical and thermal conductivity of solids. Three hours lecture and one hour discussion per week.

- 353 Selected Topics in Applied Physics I (3)**
Prerequisite: Physics 113, 221, 223, 225, 231, 241 and Mathematics 304 (Mathematics 304 may be taken concurrently). Topics will be selected from areas of current interest including plasma physics, solid state, atmospheric physics, fluid dynamics, quantum optics, nuclear power. Three hours lecture and one hour discussion per week.

- 354 Selected Topics in Applied Physics II (3)**
Prerequisite: Physics 353. Continuation of Physics 353. Three hours lecture and one hour discussion per week.

POLITICAL SCIENCE

Prerequisites may be waived by consent of department.

- 300 Empirical Political Theory (3)**
Consideration of the elements of scientific method; scientific method and social phenomena; critics of the scientific approach in political science, nature and logic of explanatory theories, such as systems theory, structural-functional analysis and deductive theories.

- 301 Positive Models and Theories of Strategy (3)**
An introduction to utility theory, model building, game theory and political man as a rational decision-maker. Special emphasis is given to the consideration of work dealing with strategies of bargaining and voting procedures.

- 320 Introduction to American Constitutional Law (3)**
Study of leading American constitutional principles as they have evolved through important decisions of the United States Supreme Court.

- 321 Civil Liberties (3)**
Civil rights in the American constitutional context, emphasizing freedom of expression, minority discrimination, loyalty and rights of defendants.

- 324 Judicial Behavior (3)**
Anthropological, economic, psychological and social dimensions of judicial behavior; judicial attitudes, voting behavior and decision-making.

- 328 The Supreme Court (3)**
Prerequisite: Political Science 320. A survey of the Supreme Court emphasizing judicial personality. Small group decision-making theory is applied to various courts, especially the Marshall, Lincoln, Roosevelt, Vinson and Warren courts.

- 329 Studies in Public Law (3)**
Selected topics in Constitutional law, administrative law, legal philosophy, history of the Supreme Court and judicial process. May be repeated.

POLITICAL SCIENCE

- 330 **The American Presidency (3)**
Study of the constitutional, political, legislative and administrative roles played by the American chief executive in the development of public policy.
- 331 **Legislative Process (3)**
Congressional elections, constituent relations, policymaking and leadership, relations between Congress and administrative and executive agencies, the committee system, seniority and procedure. Congress as an element in the party system.
- 332 **Studies in Political Behavior (3)**
Selected topics such as electoral behavior, political opinion, political socialization, political leadership, political violence and others. May be repeated.
- 333 **Studies in Policy Formation (3)**
Selected topics such as science and public policy, environmental policy, and other domestic policy domains. May be repeated.
- 335 **Political Parties (3)**
Development, organization, functions, activities of major and minor political parties; pressure groups, elections administration, especially in the United States.
- 340 **Public Administration (3)**
Survey of public administration, with reference to organization, financial administration, personnel management, judicial control of the administrative process.
- 341 **Comparative Public Administration (3)**
A comparative study of the characteristics of public administrators, their institutions and environments in Western democratic, developing nations and Communist political systems.
- 345 **Business and Government (3) (Same as Economics 355)**
Prerequisite: Economics 51. Relations between business firms and government at all levels. Questions of regulation, public ownership, guidelines and competition considered.
- 349 **Studies in Public Administration (3)**
Selected topics in administrative organization, personnel management, fiscal control, public policy and political administrative environments. May be repeated.
- 352 **The Politics of Modernization (3)**
Analysis of the dimensions and problems of modernization and the role of political systems, with primary emphasis on African nations.
- 353 **Soviet Political Systems (3)**
Examination of government and politics in the Soviet Union dealing with themes such as the role of the Party, recruitment and socialization of elites, the role of ideology and interest groups, the formulation of policy, bureaucratization of social, economic and cultural life.
- 354 **Political Systems of Mexico, Central America and the Caribbean (3)**
Prerequisite: Political Science 11 or 12. The political systems, international problems, and socioeconomic-cultural environments of the governmental process in Mexico, Central America, and the Caribbean.
- 355 **Political Systems of South America (3)**
Prerequisite: Political Science 11 or 12. The political systems, international problems and socioeconomic-cultural environments of the governmental process in South America.
- 359 **Studies in Comparative Politics (3)**
Studies of political processes in specific geographic areas and related concepts in comparative analysis. May be repeated.
- 365 **Normative Political Philosophy (3)**
Analysis of the concepts of justice, liberty, equality, power and authority in political philosophy. Theories of revolution. General consideration of problems in normative political philosophy.
- 368 **Studies in Political Theory (3)**
Selected topics such as American political thought, utopian political thought, and theories of revolution. May be repeated.
- 375 **Urban Planning and Politics (3)**
Examination of the political processes of urban areas as they relate to the planning of services and facilities.

POLITICAL SCIENCE

- 376 **Community Politics (3)**
Examination of the structure and processes of politics in the urban community, with emphasis on their relationships to community power structures.
- 378 **Studies in Urban Politics (3)**
Selected topics in urban politics, such as ethnic politics, theories of urban violence, and ghetto politics. May be repeated.
- 379 **The Socio-Political Nature of Urban Regions (3) (Same as Sociology 370)**
An interdisciplinary seminar providing the student with an opportunity to develop an understanding of the modern metropolis through the perspectives of sociology and political science.
- 380 **International Politics: Theory and Process (3)**
Examination of the principal theories of international politics, focusing especially upon the processes of international political behavior, including coalition-formation, negotiation and bargaining and integration and community-building.
- 381 **Foreign Policy Decision-Making (3)**
Empirical and experimental studies of foreign policy decision-making processes.
- 383 **International Integration (3)**
The processes by which new political entities are formed in the international system replacing previously discrete national units.
- 388 **Studies in International Relations (3)**
Regional or functional problems in international relations, e.g., international relations of the Middle East, Western Europe, international coalitions. May be repeated.
- 390 **Special Readings (Credit arranged)**
Independent study through readings, reports and conferences.
- 400 **Introduction to Political Analysis (3)**
Introduction to the modes and techniques of explanation and inquiry appropriate to political science. The nature of scientific method and problems of its application to social phenomena; theory and values in political science; theory building; political concepts and concept formation; approaches to political science such as communications theory, group theory and game theory.
- 401 **Introduction to Political Research (3)**
Prerequisite: Statistics. Introduction to the methods and techniques, analysis of roll call votes, public opinion surveys, content analysis, questionnaire construction, use of high-speed data facilities in data processing, analysis and interpretation.
- 408 **Directed Readings in Research Methods (Credit arranged)**
Independent study through readings, reports and conferences.
- 427 **Directed Readings in Public Law (credit arranged)**
Independent study through readings, reports and conferences.
- 430 **Proseminar: American Political Process and Behavior (3)**
Study of individual and group political behavior including socialization, participation, consensus formation, representation, legislative judicial behavior.
- 438 **Directed Readings in American Political Process and Behavior (Credit arranged)**
Independent study through readings, reports and conferences.
- 439 **Seminar: American Political Process and Behavior (3)**
Research problems and design in American political process and behavior.
- 441 **Administrative Organization and Behavior (3)**
Public organizations are examined as open social systems. Empirical and normative theories of organizational behavior and development, models of organizational analysis, the relationship of the public organization to its environment, interorganizational and intraorganizational behavior, theories of organizational change, decision theory and organizational behavior and the relationships between public and private organizations.

POLITICAL SCIENCE

- 442 **Accountability in Public Systems (3)**
Study of the basic tools and techniques relevant to decision-making and problem solving in public organizations and the management of public policy. Theories of management and control, systems analysis, decision theory, program development, policy evaluation, management of organizational change, resource allocation and control, constituency analysis, executive-legislative relationships and the nature of administrative leadership.
- 448 **Directed Readings in Public Administration (Credit arranged)**
Independent study through readings, reports and conferences.
- 450 **Comparative Political Systems (3)**
Classification and typology of political systems; structural-functional analysis; political culture, ideology, affiliation and participation; decision-making processes; political roles; organization of authority.
- 458 **Directed Readings in Comparative Politics (Credit arranged)**
Independent study through readings, reports and conferences.
- 459 **Seminar: Comparative Politics (3)**
Research problems and design in comparative politics.
- 460 **Proseminar: Normative Political Theory (3)**
Study of concepts and problems in normative political theory.
- 466 **Directed Readings in Political Theory (Credit arranged)**
Independent study through readings, reports and conferences.
- 469 **Seminar: Political Theory (3)**
Research problems and design in political theory.
- 470 **Proseminar: Urban Politics (3)**
Examination of the relationship between the social, economic and political systems of urban areas. Urban political structure, patterns of influence, political participation and communication and political change. Special attention to problems of access to and control of urban political systems.
- 471 **Regional Politics (3)**
Relationships among diverse units of government. Political, fiscal, functional and ecological relationships.
- 478 **Directed Readings in Urban and Regional Politics (credit arranged)**
Independent study through readings, reports and conferences.
- 479 **Seminar: Urban Politics — Urban Research Design (3)**
Research problems and design in urban and regional politics.
- 480 **Proseminar: Theory and Process of International Politics (3)**
Examination of theoretical approaches to and applications of international politics, including: "traditional" approaches; "Realpolitik" and the Idealist reaction; capability analysis; general and particular systems analysis; content analysis; decision-making; simulation and gaming.
- 488 **Directed Readings in International Politics (Credit arranged)**
Independent study through readings, reports and conferences.
- 489 **Seminar: International Politics (3)**
Research problems and design in international politics.
- 490 **Thesis Research (Credit arranged)**

PSYCHOLOGY

Prerequisites may be waived by consent of department.

- 301 **Advanced Statistics and Experimental Design (3)**
Prerequisite: 12 hours of psychology, including Psychology 201. Statistical methods particularly useful in psychological research and the design of experiments appropriate to these methods.
- 350 **Special Readings (Credit arranged)**
Prerequisite: Consent of instructor. Independent study through readings, reports and conferences.

PSYCHOLOGY

- 366 **Mathematical Psychology (3)**
Prerequisite: Psychology 219 and consent of instructor. The use of mathematical models in psychology.
- 401 **Proseminar: General Psychology I (4)**
- 402 **Proseminar: General Psychology II (4)**
- 403 **Proseminar: Psychopathology (3)**
- 404 **Proseminar: Introduction to Clinical Assessment (3)**
- 405 **Proseminar: Personality (3)**
- 406 **Proseminar: Personality Assessment I (2)**
- 407 **Proseminar: Personality Assessment II (2)**
- 411 **Proseminar: Learning and Cognitive Processes (3)**
- 412 **Proseminar: Social Psychology (3)**
- 413 **Proseminar: Developmental Psychology (3)**
- 414 **Proseminar: Perception (3)**
- 415 **Proseminar: Physiological and Comparative Psychology (3)**
- 416 **Proseminar: Animal Behavior and Genetics (3)**
- 421 **Quantitative Methods I (3)**
- 422 **Quantitative Methods II (3)**
- 423 **Psychological Scaling (3)**
- 424 **Factor Analysis (3)**
- 425 **Mathematical Models (3)**
- 426 **Computer Programming (3)**
- 431 **Practicum: Introduction to Clinical Assessment (2)**
- 432 **Practicum: Clinical Practice I (2)**
- 434 **Practicum: Specialized Techniques in Psychological Intervention (Credit arranged)**
- 441 **Seminar: Personality and Behavior Change I (2)**
- 442 **Seminar: Personality and Behavior Change II (2)**
- 443 **Seminar: Problems in Psychopathology (3)**
- 444 **Seminar: Problems in Personality (3)**
- 445 **Seminar: Community Psychology (3)**
- 461 **Seminar: Learning (3)**
- 462 **Seminar: Motivation (3)**
- 463 **Seminar: Social Psychology (3)**
- 464 **Seminar: Perception (3)**
- 465 **Seminar: Physiological Psychology (3)**
- 466 **Seminar: Developmental Psychology (3)**
- 467 **Seminar: Conceptual Systems (3)**
- 468 **Seminar: Cognitive Processes (3)**
- 469 **Seminar: Animal Behavior (3)**
- 470 **Seminar: Behavior Genetics (3)**
- 471 **Seminar: Comparative Psychology (3)**
- 481 **Principles of Scientific Inquiry (3)**
- 482 **Ethics for Psychologists (1)**
- 483 **Directed Research (Credit arranged)**
- 484 **Directed Readings (Credit arranged)**
- 491 **M.A. Thesis Research**
- 492 **Ph.D. Thesis Research**

SOCIOLOGY

Prerequisites may be waived by consent of department.

- 302 **Urban Sociology (3)**
Prerequisite: Sociology 10 or 20; at least junior or graduate standing or consent of instructor. Urbanization as a world phenomenon; ecological, demographic and social structural approaches to the urban community.

- 304 Industrial Sociology (3)**
Prerequisite: Sociology 10 or 20, at least junior or graduate standing or consent of instructor. The work setting as a social system. Types of occupations and their sociological relevance.
- 312 Social Stratification (3)**
Prerequisite: Sociology 10 or 20; at least junior or graduate standing or consent of instructor. Theories of social stratification and an examination of current research. Changes in the occupational and hierarchical structure of contemporary society.
- 314 Social Change (3)**
Prerequisite: Sociology 10 or 20; at least junior or graduate standing or consent of instructor. The relationship between structural changes and alterations in culture. The individual, the group and the collectivity as agents of change.
- 316 Ideology and Social Movements (3)**
Prerequisite: Either Sociology 146, 234, or 314. Effect of events and social processes on thought and action in the twentieth century. Social functions of ideologies as expressed in movements and formal and informal organizations seeking social change.
- 322 Advanced Quantitative Techniques (3)**
Prerequisite: Sociology 120 or consent of instructor. A study of advanced quantitative analysis of sociological data, focusing on problems of multivariate analysis, sampling theory and techniques, and the use of electronic data processing in approaching these problems.
- 326 Criminology (3) (F & W)**
Prerequisite: 3 hours sociology or anthropology or consent of instructor. Crime as a social phenomenon. Theory and research concerning the causes of crime.
- 330 Institutions and the Control of Crime and Delinquency (3) (W)**
Prerequisite: Sociology 214 or 326. Institutional responses to crime and delinquency. Theories and programs of rehabilitation and punishment. Organizational conditions affecting behavior or related personnel.
- 332 Advanced Methodology (3)**
Prerequisite: Sociology 130 or consent of instructor. A study of methodological problems on an advanced level, focusing on contemporary issues in the processes of inquiry with particular emphasis on the applicability of different modes of research to various types of theoretical problems. Consideration of ethical problems in social research.
- 342 Demography (3)**
Prerequisite: Sociology 10 or 20; junior standing or consent of instructor. Sociological aspects of theories relating man and ecological environment. Selected topics including fertility and population change, community planning and urbanism and demographic aspects of Western and non-Western cultures.
- 344 Problems of Urban Community (3)**
Prerequisite: Sociology 10 or 20; junior standing or consent of instructor. The urban community as an arena of social action and problem-solving with emphasis on the sociological aspects of urban problems.
- 350 Special Study (credit arranged)**
Prerequisite: Consent of instructor. Independent study through readings, reports and field research.
- 352 Advanced Principles of Sociology (3)**
Prerequisite: Sociology 10 or 20; junior standing or consent of instructor. Analysis of the main concepts and principles of sociology, and survey of sociology as a social science.
- 354 Occupational Sociology (3)**
Prerequisite: Sociology 10 or 20; junior standing or consent of instructor. The social nature of work. Role behaviors by occupational types. Occupations and the social structure. The socialization of the worker. The patterns and determinants of occupational achievement in American and other societies. Deviant occupations and their social significance.
- 360 Sociology of Minority Groups (3)**
Prerequisite: Sociology 10 or 20; junior standing or consent of instructor. The study of dominant-subordinate group

- relations. Religion, ethnicity and race as factors affecting conflict, competition, accommodation and assimilation.
- 364 The Sociology of Religion (3)**
Prerequisite: Sociology 10 or 20; at least junior or graduate standing or consent of instructor. Religion as a universal phenomenon. The effect of religion upon the individual and society. The organization of religious enterprises.
- 366 Drugs and Socialization (3)**
Prerequisite: Sociology 210 or 6 hours of Sociology and consent of instructor. Mood drugs, their use and abuse in contemporary society; their effect on society and the socialization process as a system of values and as a means of social control and social change.
- 377 Personality and Culture (3) (V)**
Prerequisite: Sociology 10 or 20, junior standing or consent of instructor. Analysis of behavior from the standpoint of interaction between psychological systems, sociological systems and cultural systems.
- 378 Advanced Social Psychology (3)**
Prerequisite: Sociology 160 or Psychology 160, junior standing or consent of instructor. Intensive concentration on selected topics and issues; model building, interaction analysis, group process and structure.
- 379 The Socio-Political Nature of Urban Regions (3) (Same as Political Science 379)**
Prerequisite: Sociology 302 or Political Science 170 or 376. An interdisciplinary seminar providing the student with an opportunity to develop an understanding of the modern metropolis through the perspectives of sociology and political science.
- 392 Advanced Sociological Theory (3)**
Prerequisite: Sociology 110 or consent of instructor. Recent and current developments in sociological theory in the light of its traditions and issues. The state of modern theory with regard to specific conceptual and substantive concerns.
- 424 Research Practicum (3)**
Prerequisite: Sociology 322 and 332 or consent of instructor. Involvement of students in an individual or group project culminating in a report, in order to provide first-hand experience in integration of theoretical concerns, methodological principles and appropriate research techniques in an empirical study, the subject of which shall be determined in collaboration with the instructor.
- 440 Seminar in Urban Sociology (3)**
Prerequisite: Nine hours of undergraduate course work in sociology and consent of instructor. S. SUTKER, S.S. SUTKER
- 450 Seminar in Social Psychology (3)**
Prerequisite: Nine hours of undergraduate course work in sociology and consent of instructor.
- 460 Seminar in Deviant Behavior (3)**
Prerequisite: Nine hours of undergraduate course work in sociology and consent of instructor. HIMELHOCH
- 462 Sociology of Criminal Law (3)**
Prerequisite: 12 hours of undergraduate course work in sociology and consent of instructor. A survey of research on the formulation, enforcement and administration of criminal law.
- 470a Seminar in Sociological Issues (3)**
470b Prerequisite: Nine hours of undergraduate course work in sociology and consent of instructor. Consideration of an issue or area of the instructor's choice, not already covered by one of the other 400-level courses. May be taken up to three times for up to nine hours credit, provided the subject matter is different each time the seminar is taken by the student.
470c
- 480 Individual Study (3)**
Prerequisite: Consent of adviser and instructor. Designed to give the student the opportunity to pursue particular interests within the discipline and/or to study areas not currently covered by formal courses. Guided by faculty with appropriate interests. May be taken only twice.

SOCIOLOGY

- 490 **Supervised Research (1–6)**
Prerequisite: Sociology 322, 332, and 392 and consent of instructor. Individual supervision of research leading to the preparation of a thesis, research paper or publishable article, in which the student demonstrates skills in the discipline of sociology.

SPANISH

Prerequisites may be waived by consent of department.

- 310 **Spanish Literature from 1898 to 1939 (3)**
Prerequisite: Spanish 201. A study of cultural and literary characteristics of the period. Emphasis on leading novelists, poets, essayists and dramatists.
- 315 **Spanish Literature from 1939 to the Present (3)**
Prerequisite: Spanish 201. A study of cultural and literary developments since the Spanish Civil War. Emphasis on leading novelists, and dramatists.
- 320 **Poetry, Drama and Fiction of the Nineteenth Century (3)**
Prerequisite: Spanish 201. A study of the culture and literature of Spain in the nineteenth century with emphasis on the leading figures on Romanticism and Realism.
- 325 **Poetry and Drama of the Golden Age (3)**
Prerequisite: Spanish 201. A study of cultural and literary characteristics Vega, Tirso de Molina, Ruiz de Alarcon, Calderon de la Barca and from the poetry of Garcilaso, Fray Luis de Leon,
- San Juan de la Cruz, Gongora Lope de Vega, Quevedo.
- 330 **Cervantes (3)**
Prerequisite: Spanish 201. A study of *Don Quixote* in relation with the author's life and with the cultural background of the Spanish Golden Age. Independent reading of other works of Cervantes.
- 335 **Masterpieces of Spanish Medieval & Renaissance Literature (3)**
Prerequisite: Spanish 201. Designed to acquaint students with the cultural background of Medieval and Renaissance Spanish traditions. Critical reading and discussion of representative works of these periods: *Poema del Cid*; *El Conde Lucanor*; *Libro de Buen Amor*; *El Romancero*; *La Celestina*; the picaresque novel, and *Don Quixote*.
- 340 **Spanish American Literature of the Nineteenth Century (3)**
Prerequisite: Spanish 202. A study of the culture and literature of Spanish America in the nineteenth century with emphasis on the leading figures of *Modernismo* and representative novelists and essayists of this period
- 345 **Spanish American Literature of the Twentieth Century (3)**
Prerequisite: Spanish 202. A study of the leading Spanish American poets, essayists and novelists of this period as interpreters of contemporary man's dilemma and the "pathos" and "ethos" of their culture.
- 399 **Seminar on Hispanic Literature (3)**
Required of major students in the senior year. Subject to be announced every year by the instructor in charge of the seminar. Senior standing required.

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CAMPUS KEY

Office and Department Index

Office assignments are subject to change.

- 1) **BENTON HALL**
Audio-Visual Department
Business Office
Chancellor's Office
Chemistry Department
Faculties, Office of the Dean of Graduate School
Physics Department
Physics Multi-Media Laboratory
Public Information, Office of
Research Administration, Office of Switchboard
- 2) **STADLER HALL**
Biology Department
Counseling Service
Psychology Department
- 3) **7956 NATURAL BRIDGE ROAD**
- 4) **TEMPORARY BUILDING**
- 5) **LAKE**
- 6,7) **TENNIS COURTS**
- 8) **ADMINISTRATION BUILDING**
Admissions Office
Alumni Activities
Cashier
Financial Aids Department
Physical Plant
Placement Office
Project UNITED
Student Affairs Office
Traffic, Safety and Security Office
- 9) **TEMPORARY BUILDING**
- 10) **MAINTENANCE DEPARTMENT**
- 11) **SWIMMING POOL**
- 12) **THOMAS JEFFERSON LIBRARY**
Archives
Library Office
- 13) **WILLIAM CLARK HALL**
Language Laboratory
Mathematics Department
Modern Foreign Languages and Literatures Department
Statistics Laboratory
- 14) **LUCAS HALL**
Administration of Justice Program
Arts and Sciences, College of
Evening College
English Department
Fine Arts Department
History Department
Philosophy Department
Radio Station KWMU
Speech Department
- 15) **SOCIAL SCIENCES, BUSINESS AND EDUCATION BUILDING AND TOWER**
Business Administration, School of
Community and Metropolitan Studies, Center of
Computer Center
Economics Department
Education, School of (all departments)
International Studies, Center for
Political Science Department
Sociology-Anthropology Department
- 16) **UNIVERSITY CENTER**
Bookstore, University
Cafeteria
Student Activities Office
Student Newspaper Office
- 17) **J. C. PENNEY BUILDING**
Extension Division
- 18,19) **PARKING GARAGES**
- 20) **MULTI-PURPOSE BUILDING**
Athletic Department
- 21) **OFFICE BUILDING**
Accounting Department
International Studies, Office of
Mail Room and Receiving
Payroll Department
Personnel Office
Print Shop
Publications, Office of Campus
Purchasing Department
Student Loan Department
- 22) **UMR ENGINEERING BUILDING**
Graduate Engineering Center,
St. Louis

